

Public sector response to COVID -19 Pandemic in India: Challenges and lessons learned

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Abstract: The COVID-19 pandemic has had a significant impact on the public sector in India, leading to a range of challenges that have required swift and effective responses. This abstract provides an overview of the challenges faced by the public sector in India in responding to the pandemic, and the lessons learned from the experience. The challenges faced by the public sector in India have included a shortage of medical supplies, equipment and hospital beds, as well as limited testing capacity and inadequate health infrastructure. Additionally, India's large population and the spread of the virus in densely populated urban areas have created additional challenges. Despite these challenges, the public sector has responded with a range of measures, including the establishment of COVID-19 hospitals and quarantine facilities, the provision of financial assistance to those affected by the pandemic, and the development of innovative solutions such as telemedicine and online consultation services. The experience of the COVID-19 pandemic has also highlighted a range of lessons for the public sector in India. These include the need for greater investment in healthcare infrastructure, the importance of effective communication and coordination between different levels of government, and the need for proactive planning and preparation for future pandemics. Overall, the response of the public sector in India to the COVID-19 pandemic has been a complex and challenging process, but it has also provided important lessons and insights for the future.

Keywords: Public sector response, COVID-19 pandemic, Technology, Communication strategies

Introduction

The COVID-19 pandemic has been an unprecedented global crisis that has affected millions of people worldwide, including India. The public sector in India, comprising various government agencies and departments, has played a critical role in responding to the pandemic. This research paper aims to comprehensively examine the public sector response to the COVID-19 pandemic in India. It focuses on five main objectives: identifying major challenges faced by the public sector during the pandemic, assessing their response to these challenges, examining the impact of the pandemic on the public health system, analyzing the role of technology in the public sector's response, investigating the effectiveness of communication strategies employed by the Indian government, and identifying key lessons learned to propose recommendations for future pandemic preparedness. The COVID-19 pandemic has presented major challenges to the public sector in

India. The country's healthcare infrastructure has been inadequate to deal with the sudden surge in COVID-19 cases. In addition, the limited availability of medical supplies and equipment, such as personal protective equipment (PPE) and ventilators, has further strained the healthcare system. The shortage of healthcare professionals, including doctors, nurses, and paramedics, has also posed a significant challenge to the public sector response to the pandemic (Bhattacharya et al., 2020). Despite these challenges, the public sector in India responded to the crisis by implementing various measures to control the spread of the virus. These measures included lockdowns, increased testing, contact tracing, and the establishment of COVID-19 hospitals and isolation centers (Bhattacharya et al., 2020). However, the effectiveness of these measures varied, and there were instances of non-compliance with guidelines and protocols (Mishra et al., 2020).

The COVID-19 pandemic has had a

significant impact on the Indian public health system. The sudden surge in cases highlighted the need for greater investment in healthcare infrastructure and the need to enhance preparedness for future pandemics. The pandemic also exposed gaps in the healthcare system, such as the lack of coordination between different government agencies and departments and the lack of a unified response to the crisis (Singh et al., 2020). These findings underscore the need for improvements in the public health system to better prepare for future health crises. Technology played a vital role in the public sector's response to the COVID-19 pandemic in India. Mobile applications, telemedicine, and artificial intelligence were used to facilitate remote consultations and patient monitoring, track the spread of the virus, and provide real-time information to healthcare professionals (Srivastava et al., 2021). These technologies helped to minimize the risk of infection for healthcare workers and improve patient outcomes. Effective communication is crucial in responding to a public health crisis such as the COVID-19 pandemic. The Indian government employed various communication strategies to disseminate important public health information to the public. However, there were instances of misinformation and confusion, which highlighted the need for clearer and more consistent messaging (Chauhan et al., 2021). The study evaluates the effectiveness of the communication strategies employed by the Indian government during the pandemic and identifies areas for improvement to enhance public understanding of the pandemic. This research paper also identifies key lessons learned from the public sector's response to the COVID-19 pandemic in India. These lessons include the need for greater investment in healthcare infrastructure, the importance of a unified response to a crisis, the vital role of technology in pandemic response, and the need for effective communication strategies (Gupta et al., 2020). Based on these lessons, the study proposes recommendations for strengthening the public health system and improving preparedness for future health crises. This research paper provides valuable insights into the challenges faced by the public sector in India during the COVID-19 pandemic, the response to these challenges, and the lessons learned for future pandemic preparedness.

Review of literature

Sahoo et al. (2020) conducted a study on the preparedness of Indian states for the COVID-19 pandemic and found that there were significant variations in preparedness levels across states. The authors emphasized the need for a coordinated national response to the pandemic. Singh and Adhikari (2020) analyzed the challenges faced by

the Indian healthcare system during the COVID-19 pandemic and identified a lack of preparedness, insufficient healthcare infrastructure, and a shortage of medical supplies and personnel as major issues. Gopalan et al. (2020) evaluated the impact of the pandemic on the Indian economy and identified the public health crisis as the primary factor responsible for the economic downturn. The authors recommended increased investment in healthcare infrastructure as a means of mitigating the impact of future pandemics. Mukherjee et al. (2020) assessed the effectiveness of the Indian government's communication strategies during the pandemic and found that there were several gaps in the dissemination of accurate and timely information to the public. Chauhan and Singh (2020) examined the use of technology, such as telemedicine and mobile applications, in the Indian healthcare system during the pandemic and found that these technologies played a crucial role in managing the crisis. Babu et al. (2020) conducted a study on the impact of the pandemic on mental health in India and found that the pandemic had led to a significant increase in psychological distress and anxiety among the general population. Bhatia et al. (2020) evaluated the impact of the pandemic on the Indian education system and identified significant disruptions to teaching and learning processes as well as challenges in accessing education due to the digital divide. Bhattacharya et al. (2021) assessed the impact of the pandemic on the Indian labor market and identified a significant increase in unemployment and loss of income, particularly among informal sector workers. Patel et al. (2021) evaluated the effectiveness of the COVID-19 vaccination program in India and identified several challenges, including vaccine hesitancy and the need for greater vaccine availability and accessibility in rural areas. These studies highlight the challenges faced by the Indian public sector during the COVID-19 pandemic, including preparedness, healthcare infrastructure, communication, and economic impact. They also emphasize the role of technology, mental health, education, labor, and vaccination in the pandemic response. Understanding these challenges and lessons learned is crucial for enhancing the public health system and improving preparedness for future health crises.

Need of study

The COVID-19 pandemic has had a significant impact on the public sector in India, leading to a range of challenges that have required swift and effective responses. Understanding the challenges faced by the public sector in responding to the pandemic and the lessons learned from the experience is essential for developing effective

strategies to respond to future pandemics. A study of the public sector response to the COVID-19 pandemic in India can provide valuable insights into the strengths and weaknesses of the current healthcare system and the effectiveness of the government's response. It can also help identify the gaps in the system and the areas where additional resources and investments are required. Moreover, the study can provide a basis for developing effective policies and strategies for future pandemics. It can help policymakers understand the critical areas that need attention and identify the best practices and innovative solutions that can be replicated in similar situations. The study can also provide valuable information to healthcare professionals and other stakeholders in the healthcare industry, helping them better understand the challenges faced by the public sector and how to improve their response in the future. A study of the public sector response to the COVID-19 pandemic in India is critical in understanding the challenges and lessons learned which can help develop more effective policies and strategies for responding to future pandemics.

Result and discussion

Indian public sector challenges and COVID-19 response.

There are some specific examples of the major challenges faced by the public sector in India during the COVID-19 pandemic and how they responded to them:

Healthcare infrastructure: The public sector in India faced a shortage of healthcare infrastructure, including hospital beds, medical supplies, and staff to manage the surge in COVID-19 cases. In response, the government launched the "COVID-19 Emergency Response and Health System Preparedness Package" with a budget of INR 15,000 crores (\$2.2 billion) to strengthen healthcare infrastructure, including the creation of COVID-19 dedicated hospitals, upgrading existing healthcare facilities, and increasing the availability of medical supplies and equipment.

Communication: The public sector faced challenges in communicating the right information to the public about the virus and its prevention. In response, the government launched several campaigns, such as the "Jan Andolan" campaign, which aimed to create awareness about COVID-19 and promote the adoption of COVID-19 appropriate behaviours like wearing masks, practicing social distancing, and washing hands regularly.

Economic downturn: The public sector faced challenges in providing relief to those impacted by the economic downturn. In response, the government announced several relief measures, including the "Pradhan Mantri Garib Kalyan

Yojana" (PMGKY) package, which aimed to provide free food and cash transfers to vulnerable sections of society, such as migrant workers and the urban poor.

Transportation and logistics: The public sector faced challenges in delivering essential supplies such as medical equipment, medicines, and food due to disrupted transportation and logistics. In response, the government established the "COVID-19 Emergency Response and Health System Preparedness Package" to create a dedicated logistics cell to manage the transportation and delivery of essential supplies.

Social distancing and lockdown: The public sector faced challenges in implementing and enforcing social distancing and lockdown measures while maintaining essential services. In response, the government announced several measures such as "Janata Curfew" and "Unlock India" to gradually ease the lockdown while ensuring that essential services remained functional.

Overall, the public sector in India responded to these challenges by implementing various measures to mitigate the impact of the pandemic on the healthcare system, economy, and society. While there were some shortcomings in the response, such as the initial lack of testing and contact tracing, the public sector continued to adapt and implement new measures to tackle the evolving situation.

COVID-19 impact on Indian public health system and identify improvement areas.

The COVID-19 pandemic in India presented unprecedented challenges to the public sector, which responded by leveraging technology to manage the crisis. Technology has played a crucial role in India's public sector response to the COVID-19 pandemic, particularly in the areas of mobile applications, telemedicine, and artificial intelligence (AI). The Indian government launched the "Aarogya Setu" app, which is a contact tracing app that uses Bluetooth technology to detect and alert users if they have been in close proximity to a COVID-19 positive person. The app also provides information on COVID-19 symptoms and self-assessment tools, helping users to take necessary precautions and seek medical attention if needed. This app has been instrumental in tracking COVID-19 cases and helping to curb the spread of the virus in India. Telemedicine has played a critical role in India's healthcare response to the pandemic. With doctors using video consultations to diagnose and treat patients remotely, telemedicine has reduced the burden on hospitals, minimized the risk of infection transmission, and enabled patients to access medical services from the safety of their

homes.

Many healthcare providers in India have rapidly adapted to telemedicine services, providing consultations and follow-up care to patients online. The public sector in India has also leveraged artificial intelligence (AI) to manage the pandemic. AI-based systems are being used to analyze COVID-19 data, predict disease spread, and develop targeted intervention strategies. AI-powered robots have been deployed in hospitals to minimize contact between healthcare workers and COVID-19 patients. These robots are equipped with sensors and cameras that can monitor patient vital signs and provide real-time feedback to healthcare workers. The use of technology has enabled the public sector to manage the pandemic more efficiently, reducing the risk of transmission, and providing better healthcare services to patients. However, there are still challenges to overcome, particularly in terms of the digital divide and access to technology. Not all patients have access to smartphones, internet connectivity, or other necessary technology, which limits the effectiveness of telemedicine and other digital services. The use of technology has helped the public sector in India to mitigate the impact of the pandemic and adapt to the new normal. As the pandemic continues to evolve, the public sector will need to continue to leverage technology and find innovative solutions to address emerging challenges. The COVID-19 pandemic has highlighted the importance of technology in healthcare and the public sector, and will likely have a lasting impact on how technology is used in these sectors in India and beyond.

Indian government's pandemic communication strategies

The Indian government's communication strategies during the COVID-19 pandemic have played a crucial role in shaping public perceptions and behaviours related to the virus. Effective communication is key to containing the spread of the virus and ensuring that the public follows guidelines and protocols aimed at preventing transmission.

The Indian government has employed a range of communication strategies to keep the public informed about the pandemic. These strategies have included regular press briefings, social media campaigns, and public service announcements on television and radio. The government has also established a national COVID-19 helpline to address public concerns and provide guidance on prevention and treatment.

Despite these efforts, there have been challenges in communicating important public health information to the public. The COVID-19

pandemic has led to an overwhelming amount of information being circulated through social media and other sources, which has made it difficult for the public to discern reliable information from misinformation. Additionally, there have been instances of conflicting information being disseminated by different government agencies, leading to confusion among the public.

To overcome these challenges, improvements can be made in the government's communication strategies. One area for improvement is the use of local language and dialects in public health messaging. While many official communications are in English or Hindi, there are a large number of citizens who do not speak these languages. As a result, they may not fully understand or comply with guidelines and protocols aimed at preventing the spread of the virus. To address this issue, the government can work with local language experts and media outlets to create public health messages that are more accessible to diverse communities.

Another area for improvement is the use of community leaders and influencers to disseminate public health messages. Trusted community leaders such as religious figures, local politicians, and celebrities can play an important role in spreading accurate information and encouraging public compliance with guidelines and protocols. By partnering with these individuals, the government can ensure that public health messages reach a wider audience and are more likely to be trusted and followed. While the Indian government has employed a range of communication strategies during the COVID-19 pandemic, there is still room for improvement. By focusing on the use of local languages and community leaders, the government can better communicate important public health information to diverse populations and increase compliance with guidelines and protocols aimed at preventing transmission. As the pandemic continues to evolve, it will be important for the government to continue to adapt and improve its communication strategies to effectively address emerging challenges.

Lessons from India's COVID-19 response and suggestions.

The COVID-19 pandemic has been an unprecedented global health crisis, affecting millions of people worldwide. India, as a developing country, has had a unique experience in dealing with the pandemic. Despite facing numerous challenges such as limited healthcare resources, poor infrastructure, and a high population density, India's public sector has made significant efforts to respond to the pandemic. This essay aims to identify the key lessons learned from India's

public sector response to the COVID-19 pandemic and to propose recommendations for strengthening the public health system and improving preparedness for future health crises. One of the most crucial lessons learned from India's response to the pandemic is the importance of a robust healthcare infrastructure. India's public healthcare system has long been underfunded and under-resourced, with limited hospital beds, medical equipment, and healthcare professionals (Singh et al., 2020). The pandemic exposed these inadequacies and highlighted the need for significant investments in healthcare infrastructure and resources. The government must allocate more funds to strengthen the healthcare system, including the expansion of hospital beds, the development of new healthcare facilities, and the recruitment and training of healthcare professionals.

In addition to healthcare infrastructure, another key lesson learned is the importance of communication and awareness campaigns. The Indian government launched various awareness campaigns, including the "COVID-19 India National Preparedness Survey" and the "Stay Home, Stay Safe" campaign, to educate the public on preventive measures (Sahoo et al., 2021). However, there is a need to ensure that these awareness campaigns are accurate and accessible to all segments of the population. The government must work closely with civil society organizations and the media to disseminate reliable information and counter misinformation. The pandemic also highlighted the need for a robust public health surveillance system. The Integrated Disease Surveillance Program (IDSP) is the primary program in India responsible for tracking and responding to outbreaks of infectious diseases. The program faced significant challenges during the pandemic, including limited resources and inadequate staff, which hindered its effectiveness (Kumar et al., 2020). The government must invest more resources in public health surveillance systems and ensure that they are staffed with trained personnel.

Another lesson learned is the importance of collaboration and coordination between various stakeholders in responding to public health emergencies. The government collaborated with private hospitals to expand healthcare facilities and provide treatment for COVID-19 patients (Mehrotra et al., 2020). Such partnerships must be strengthened through the development of clear guidelines and frameworks for collaboration and coordination, which can facilitate a more effective response to public health emergencies. Furthermore, the pandemic highlighted the need to address social determinants of health, including

poverty, inequality, and social exclusion. The pandemic disproportionately affected vulnerable populations, including low-income households, migrant workers, and those living in slums (Narain & Dutta, 2021). Targeted interventions, such as improving access to healthcare, education, and social protection programs for vulnerable populations, can help address these social determinants of health and build resilience in the health system.

To improve preparedness for future health crises, the government must prioritize pandemic preparedness planning. This planning should include the development of early warning systems, rapid response teams, and stockpiling of essential medical supplies. Additionally, the government must invest in research and development for new drugs and vaccines to combat emerging infectious diseases. India's response to the COVID-19 pandemic has highlighted several lessons for strengthening the public health system and improving preparedness for future health crises. These lessons include the importance of healthcare infrastructure, effective communication, robust public health surveillance systems, collaboration and coordination between stakeholders, and addressing social determinants of health. The government must prioritize investments in these areas to build a more resilient healthcare system that can respond to future public health emergencies.

Implications of study

The study on Public sector response to COVID-19 Pandemic in India highlights several implications that can inform future policy decisions and responses to pandemics. Firstly, it is crucial to strengthen the public health system by increasing investments in healthcare infrastructure, capacity-building, and human resources. Secondly, the government must adopt a coordinated and collaborative approach involving different sectors, including health, finance, and social welfare, to address the multifaceted challenges posed by pandemics. Thirdly, the government must prioritize vulnerable groups such as migrant workers, informal sector workers, and women and children, who are most affected by pandemics. Fourthly, the study underscores the importance of evidence-based decision-making and effective communication to build public trust and facilitate effective implementation of policies. Lastly, the study highlights the need for a proactive and prepared public sector response to pandemics, which includes scenario planning, regular simulations, and capacity-building exercises. Overall, these implications can inform policy decisions and enhance the effectiveness of public sector response

to pandemics in India and other similar contexts.

Conclusion

The COVID-19 pandemic has had a significant impact on India, both in terms of public health and economic repercussions. The public sector response to the pandemic in India has been challenging, with the healthcare system and government institutions struggling to keep up with the demands of the crisis. This paper aims to provide a comprehensive overview of the challenges faced by the Indian public sector in responding to the COVID-19 pandemic and the lessons learned from this experience. One of the key challenges faced by the Indian public sector in responding to the COVID-19 pandemic was the country's healthcare system's limited capacity to handle the surge in cases. The COVID-19 pandemic exposed the gaps in India's healthcare system, including the shortage of medical personnel and equipment, inadequate infrastructure, and lack of preparedness for a public health emergency of this scale. The government's response was initially focused on imposing strict lockdowns and travel restrictions to curb the spread of the virus, which had significant economic consequences, particularly for low-income households and small businesses.

The Indian government faced criticism for the way it handled the pandemic, with many citing a lack of transparency and inadequate communication to the public about the severity of the situation. The government's messaging was often inconsistent, and there were instances where public officials downplayed the risk of the virus and discouraged testing and contact tracing. This lack of clarity and transparency contributed to the confusion and mistrust among the public and hindered the government's ability to control the spread of the virus effectively. Despite these challenges, there were several positive developments in India's response to the pandemic. The government quickly implemented measures to increase the production of personal protective equipment and essential medical supplies, such as ventilators and oxygen cylinders, to meet the rising demand. The government also ramped up testing and contact tracing efforts, which helped identify and isolate infected individuals, limiting the spread of the virus. India's public sector response to the COVID-19 pandemic also highlighted the importance of digital technology and innovation in responding to public health emergencies. The government launched several digital initiatives, including an app-based contact tracing system and telemedicine services, to facilitate remote healthcare delivery and minimize the risk of transmission. These initiatives helped overcome some of the healthcare system's shortcomings and

provided greater access to healthcare services for patients. The COVID-19 pandemic also underscored the need for greater investment in public health infrastructure and preparedness in India. The pandemic exposed the inadequacies of India's healthcare system, which had been neglected for decades due to underinvestment and insufficient attention to public health issues. The pandemic has served as a wake-up call for the government and policymakers to prioritize public health and invest in strengthening the healthcare system's capacity to handle future public health crises. India's response to the COVID-19 pandemic also provided valuable lessons for other countries facing similar challenges. One of the key takeaways from India's experience was the importance of a coordinated and evidence-based approach to public health emergencies. The government's response was initially hampered by a lack of clear guidelines and coordination among various agencies, which resulted in inconsistent messaging and confusion among the public. However, as the pandemic progressed, the government implemented more coordinated and evidence-based policies, which helped to curb the spread of the virus. Another lesson learned from India's response to the COVID-19 pandemic was the importance of community engagement and participation in public health initiatives. The government's response to the pandemic was initially top-down, with little input or involvement from the community. However, as the pandemic progressed, the government recognized the importance of community engagement and worked to involve communities in the decision-making process, which helped to build trust and cooperation among the public. In conclusion, the public sector response to the COVID-19 pandemic in India has been challenging, but it has also provided valuable lessons for future public health emergencies. The pandemic exposed the gaps in India's healthcare system,

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