

Pandemic Implications on Health – An Indian Perspective

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Abstract

The paper is aimed at understanding the impact of Covid on Healthcare. Using the key informant method, healthcare experts' views were obtained and reviewed. The result of the study indicates the need for strengthening Manpower, promoting alternative medical systems, encouraging self-reliance in research and development, digital healthcare, advanced diagnostic support services, and mental health support systems for India. The positive impacts were the expansion of telehealth, remote health care has become a reality, social cohesion, and conscience among people helping to understand the existing gaps in the health care system and recognition of indigenous medical health care. The negative impacts are difficulty in procuring additional manpower, equipment, consumables, and other resources, lack of adequate medical equipment, and differential distribution of services between urban and rural areas. Based on the review suggestion a pandemic preparedness policy framework to deal with the pandemic changes/issues required to be attended to in terms of Quality healthcare, Safety, Infrastructure, and public health, will be proposed. The study also aspires to be of interest to training and developmental organizations, policymakers, and stakeholders of health care institutions to work towards improving the quality of healthcare and enhancing pandemic preparedness.

Keywords: Healthcare, mental health, pandemic preparedness and covid 19 pandemic

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The entire world in the past two years has witnessed the severe impact of the Covid 19 pandemic. Though it has affected all aspects of human mortality and health is the primary concern. Facing the pandemic is not new to mankind. Pandemics in the past like plague, cholera, etc had resulted in a greater degree of mortality. But the magnitude of the unlike Covid -19 was restricted to a certain geographical area. Despite the advancement in medical and health sciences in the modern world, the entire globe was unable to understand the mutation of the virus and the attempts to curtail or prevent the spread met with absolute failure. Social scientists on the other hand are continuously investigating the impact of Covid-19 on humankind and society. Throughout the epidemic, global organizations such as UNICEF and UNESCO have expressed worry about the pandemic's severe influence on child education, which is predicted to affect 1.5 billion children worldwide (Whitley, J., Beauchamp, M. H., & Brown, C., 2021).

Three major pandemics struck the previous century were in 1918, 1957, and 1968. The first (Spanish flu) was caused by influenza A (H1N1) and killed between 20 and 50 million people, resulting in a 16-pc loss in global GDP. The other two, 1957 Asian Influenza (H2N2) and 1968 (H3N2), were less severe, but they still killed nearly a million people (Kilbourne, E. D., 2006). Twentieth Century, in March 2009, a novel influenza virus with the H1N1 subtype made a dramatic appearance in Mexico. The pandemic spread across the globe, killing 18,449 people in 214 countries. Adding to the list severe acute respiratory syndrome (SARS), the Middle East respiratory syndrome (MERS), avian flu (Influenza H5N1), influenza (H1N1), and the ongoing COVID-19 due to SARS-CoV-289 have all been major public health events in the last two decades of this millennium (Bobrowski, T., et al.,

2020). The purpose of this article is to emphasize that the lessons learned from pandemics should not be forgotten once the threat of a pandemic has passed. These must be translated into actions that are consistent over time.

Researchers have concentrated on looking at the impact of healthcare. The health system in India is divided into two main components (a) Public health care and (b) Private healthcare. The current public health system includes secondary and tertiary care services in major cities and focuses on providing basic health services referred to as wellness clinics in rural areas. Health care in the private sector provides secondary, tertiary, and quaternary care facilities with a large cluster of metropolitan categories I and II cities.

According to the Economic Survey (2020-21), India spends about 1.25 pc of its GDP on health, with the private sector covering more than 71 pc of healthcare costs. India has nearly twice as many private hospitals as it does public hospitals (43,487 vs. 25,778), with the private sector accounting for roughly 60% of in-patient care (Outline India, 2022). The health services are designed around the required minimum capacity, resulting in a tragic public-private divide in the aftermath of the pandemic. The majority of available ventilators, for example, are only found in private hospitals and are concentrated in just seven states. The cost of care in private health facilities was high. The current paper brings out studies from literature published during 2019 - 2022 under the following categories.

- a. Impact of the pandemic on healthcare providers
- b. Government of India (GOI) Initiatives were taken in response to pandemic
- c. Post pandemic suggestions from policy experts and stakeholders.

Impact of the pandemic Healthcare in India

When scarce resources are devoted to pandemic containment, mental health problems and interventions frequently take a backseat. Mental health concerns have been documented all across the world as a result of the COVID-19 pandemic's worldwide humanitarian crisis. Stress, anxiety, despair, insomnia, denial, rage, and fear were the most reported mental health disorders. Children and the elderly, frontline workers, and persons with mental problems were among the most vulnerable in this situation. Suicides linked to COVID-19 are becoming more common. Mental health issues have been addressed globally using guidelines and intervention tactics.

In this regard, social media has played a significant role. The GOI has released state-specific intervention plans, telepsychiatry consultations, and a toll-free helpline for psychiatric and behavioural concerns. Maintaining a positive attitude, developing vulnerable-group-specific need-based interventions with correct risk communication tactics, and staying current on COVID-19 epidemiology would guide the planning and prioritization of mental health care resources for vulnerable groups. Studies have reported that healthcare workers are a high-risk group, as the frontline workers are accustomed to working nonstop to contain the pandemic, have resulted in physical and mental burnout (Jose, S., Dhandapani, M., & Cyriac, M. C., 2020)

Impact on Healthcare workers

In a study on psychological impact during the pandemic among healthcare and non-healthcare working professionals in India was studied, it was found that depression, insomnia, and anxiety between healthcare and non-healthcare professional workers, demonstrated a significant difference between healthcare and non-health professionals (Raj, R., Koyalada, S., Kumar, A., Kumari, S., & Pani, P. 2020). Frontline workers in emergency departments expressed the need for developing interventions to reduce burnout and

strengthen resilience to ensure better quality care for patients. (Jose, 2020). Mental health concerns, burnout, anxiety, and increased mental health complaints (Torales et al.; 2020; Mohindra et al., 2020). Hence there is a need for new interventions to address the needs of healthcare professionals and psychological empowerment to guide the workforce with resilience. Safeguarding the health of responders is essential (Remuzzi, 2020; Godlee F, 2020).

Impact on Healthcare Infrastructure

The change in social & physical infrastructure has accidentally conditioned people to use digital health technology extensively. Healthcare professionals adopted digital health technology faster for non-Covid patients who need in-office care & maintain social distancing, during the pandemic. The need to keep the impetus on and sustain this newfound adoption of health technology by common people has changed the perspective of health care (Bhambere, H. S. S., Abhishek, B., & Sumit, H., 2021).

Gauttam P., et al., (2021) observed that the private healthcare providers were not reliable during the emergency. Only the public health system was appropriately operating for the country wherein the population's substantial size is rural and poor is a major concern, hence in the future National Health Policy (NHP) needs to address this passivity. Therefore, a dedicated policy in promoting public health care is critical for India. Further, enhancing the healthcare budget by allocating more funds; increasing the workforce; improving patient ratio: doctors, hospitals, and other infrastructure facilities, etc. (Gauttam P., et al., 2021).

Adding to this throwing a few more challenges in Indian healthcare Hebbar, P. B., et al (2020) observed that Indian health care infrastructure faced challenges in multiple upfront (a) restructuring the care of a hospital, in response to Covid-19, leading to non-Covid conditions delayed treatment, and (b) the lockdown affected vulnerable people. Some steps

were suggested by the author to ensure that essential services are not disturbed while dealing with the pandemic (a) Using technology for consultation (b) Improving preparedness of healthcare facilities (c) Providing medicines at the doorstep (d) Streamlining travel during the lockdown periods and (e) effective and transparent communication (Hebbar, P. B., Sudha, A., Dsouza, V., Chilgod, L., & Amin, A., 2020).

India having a substantial portion of the rural community dealing with the pandemic require special attention in the form of a greater amount of investment to prepare healthcare workers, educate the rural mass, and in creating a strong surveillance system. Special attention is required to strengthen the rural healthcare system comprising Primary Health Centres and Community Health Centres (Kumar, A., Nayar, K. R., & Koya, S. F., 2020).

Impact on Wellbeing

Amit Srivastava et al. (2020) observed that the mental health and the well-being of individuals is impacted due to pandemic. The study results highlighted the prevalence of psychological disorders such as anxiety, obsession, and fear were high among the individuals. Summerton, S. A. (2020) examined the negative impact of the pandemic on the most vulnerable resulting in the loss of jobs in the informal sector leading to malnutrition because of the insufficient bailout announced by the GOI to them. Author advocates for extensive investment in social protection and suggests a shift from feeding and cash transfer schemes to equity, empowerment, and clearly defined rights for marginalized groups.

Kramer, A. D. (2014) found that one of the most critical issues is the kind of threat perception generated due to a pandemic. It has been shown by the studies so far that in a time of crisis like these negative emotions can not only be damaging but could be contagious through their interactions amongst the social networks. Witte, K. and Allen, M (2000) opined that threat perception can serve as a defensive mechanism at the social scale. The second

most significant change is a quick and faster adaptation to personal hygiene due to threat perception. The most important claim is that people assume that the kind of lifestyle that was so familiar and generationally transmitted through culture in terms of personal hygiene could be better practiced at their homes in their native place as the facilitating context and the milieu exist. Third, because of these shifts towards the new idea of a good life, there is also a tremendous change in the way society looks at the old-age population. There is some value that people have been recognizing the old age population and old family structures in the non-urban spaces.

Another interesting study examined the sentiments of people regarding the Work-from-Home concept by analyzing Twitter activities posted on social media. Studying around 100,000 tweets worldwide using Twitter API containing the terms #WorkFromHome or #WFH they classified them into positive and negative sentiments. It was found that 73 pc of the tweets had positive sentiments and 26 pc negative. From the emotional quotient of the tweets, it was also found that the majority of the tweets were on three positive sentiments as Trust, Anticipation, and Joy (Dubey, A. D., & Tripathi, S., 2020).

According to a study conducted by Marimuthu, P., & Vasudevan, H. (2020) on a senior female employee in a prestigious organization in Malaysia, results found that there were challenges aplenty, part of which were not under the control of the employee. These included technical challenges like getting used to the new computer, internet speeds, and the slow company website, which was not able to take the new load. Compounding all these were familial challenges as she had two young kids who were at home 24 hours, which also needed her to be a full-time mother and teacher for their school assignments. Even though she started working as early as 6 am and continued past 11 PM, she could not complete her work and was facing serious stress and burnout issues. (Marimuthu, P., & Vasudevan, H., 2020).

Initiatives and Measures Taken by GOI

India's precautions to avoid the COVID-19 virus spread were Convalescent plasma therapy, which was strongly recommended since it has shown to be effective in the treatment of SARS and MERS patients. India offered production facilities for specialized medical/pharmaceutical businesses. The GOI has set up a fast-track research program to create low-cost quick diagnostic test kits and vaccinations.

There have been a few cases of hospitals that have closed because a few (HCW) healthcare workers working there were found to have tested positive for COVID 19, causing undue concern among healthcare workers, sometimes affecting the functionality of said hospital cables. The GOI advocated the necessary strategy, plans, and processes to the State Governments and UT administrations based on its previous experience in managing pandemics and epidemics. Which included containment plans and guidelines on travel, behavioural and psychosocial health, surveillance, laboratory support, hospital infrastructure, clinical management, and the rational use of Personal Protective Equipment (PPE).

Curbs in Movement

Many states in India have imposed night curfews from 10 p.m. until 5-6 a.m. to counter the angry second wave. Curfews limit unnecessary movement of people. However, the government has maintained the rules governing those who provide basic services. States like Maharashtra have also brought back the electronic passport system for efficient crowd control. Only those in extreme emergencies will receive the inter-district or interstate travel passport. Additionally, some state governments have also required traveling passengers to carry a negative RTPCR test when entering the states. With such strict guidelines, people are prevented from going out a lot, which is the latest counter to the virus.

Vaccination Steps

Vaccination centers were set to open to all Indians over 18 years of age in May (2021). So far, more than 25 pc of Indians have received the vaccine, and more than 7 people are fully vaccinated. With the accelerated vaccination strategy, more and more Indians are being vaccinated against the deadly dangers of the infamous COVID-19 virus, eliminating the possibility of future waves, and promising a return to normality once and for all.

Financial Steps

To safeguard the lives of frontline healthcare workers, the GOI introduced the Pradhan Mantri Garib Kalyan insurance scheme. This policy covers the families of people who have lost their lives because of obligations related to COVID-19. The government has spent more than Rs. 3 trillion for companies that need help. India reporting a massive surge in Covid patients, and companies are coming forward with several innovative initiatives to help the people, who are unable to get hospital beds, oxygen, ventilators, and vaccines.

Protection for Healthcare Workers

Initiatives to recognize Services Rendered by Healthcare Workers Engaged in COVID-19

- All these professionals who sign up for at least 100 days (about 3 and a half months) of Covid service and complete it successfully receive the National Covid Distinguished Service Samman from the Prime Minister of the GOI.
- A new category called "Wards of COVID Warriors" in the guidelines for the selection and nomination of candidates for MBBS positions in the core group for the academic year (2020-21) was proposed by the GOI. For this category, they reserved five MBBS places in the central pool of the academic year (2020-21).

- MBBS seats were allocated in the core pool for "COVID Warrior" district candidates' parents who lost their lives due to COVID 19.
- Providing online training and webinars, providing resources for infection prevention and control, and building capacities of human resources.
- Capacity-building initiatives to carry out large rescue ratings for the active case and follow-up were carried out through the training of state monitoring offices, rapid response equipment, and grass-root volunteers identified for Monitoring Activities, Asha workers, Anganwadi Workers, and Assistant Sister.
- In addition, training modules have also been made available on the IGOT online platform by DOPT that includes modules on Quarantine and isolation, Infection prevention through PPE, Mental health care of patients with COVID-19, Infection prevention, and control, Sample collection and testing, ICU Care, Ventilation, and clinical management.

Mental Health

The Ministry of Health and Family Welfare, GOI had issued a toll-free helpline number for '***Behavioural Health***,' The Psycho-Social toll-free helpline mental health assistance was provided during the lockdown period. A list of videos, advisories, and resource materials on coping with stress during COVID, yoga and meditation advice, taking care of the mental health of vulnerable groups, etc. have been provided in the MOHFW-GOI web portal (MoHFW, 2020). During the pandemic, many digital mental health apps gained recognition from the common people. The GOI has developed app called 'MANAS' which includes a peer support anonymous online forum. It could be a platform where people get the support they need. Tele-counselling by the National Institute of Mental Health and

Neurosciences (NIMHANS) has supported individuals, especially during the beginning of the pandemic when everyone was experiencing uncertainty and fear regarding the novel situation.

When health systems are overwhelmed, both direct mortality from an outbreak and indirect mortality from vaccine-preventable and treatable diseases increase dramatically. Countries must make tough decisions to balance the needs for a direct response to COVID19 while engaging in strategic planning and coordinated action to maintain the delivery of essential health services and mitigate the risk of systemic collapse. Community-based healthcare including outreach and campaigns played an integral part in primary care initiatives of GOI; in the context of the COVID-19 pandemic, the ability of trusted members of the community to engage socially and provide care where it is needed through healthcare workers became increasingly important.

India has taken required precautions to avoid the COVID-19 virus spread ranging from Convalescent plasma to the Invention of two in-house Vaccinations. India offers production facilities for specialized medical/pharmaceutical businesses globally. The GOI has set up a fast-track research program to create low-cost quick diagnostic test kits and vaccinations, especially with oxygen concentrators, ICU support equipment, and testing.

Post-pandemic Suggestions

From the literature review, we observed that experts' and consultant groups' views towards post-pandemic suggestions. The National Institute of Mental Health and Neurosciences (NIMHANS) suggested creating a team '*Psychological intervention medical team,*' which is dedicated team as part of general medical services to attend to the people affected by the pandemic. Along with this Aarogya Setu mobile application, a mobile app-based support system to provide key information on Covid, Risk, and Awareness was rolled

out by the GOI. Although there are mental health initiatives, India seriously lacks the implementation of policies.

Chaudhary, A. (2021) observes that the healthcare infrastructure bears a significant portion of the responsibility for providing curative measures while also working to prevent disease through universal vaccination. To overcome the shortcomings in private and public healthcare sectors, it is necessary to facilitate the *creation of a collaborative environment for public and private healthcare providers*. (Chaudhary, A., 2021)

It was found that Tele-psychiatry and mobile telepsychiatry for reaching out to vulnerable communities for the early detection and treatment of psychosis is an effective approach to reducing treatment gaps. Tele-mentoring based on the **NIMHANS ECHO** model for consultation, training, and education is effective not only for building the capacity of mental health professionals but also for conducting regular review meetings with district mental health program staff (Banerjee, D., Kosagisharaf, J. R., & Rao, T. S., 2021).

Arnaz Dalal, (2021) emphasized the extensive need to invest in epidemiological modelling to predict outbreaks, this will help in determining what types of public and mental health interventions are required. There is a need to strengthen digital infrastructure in all areas of pandemic control, hotspot identification, contact tracing, and remote clinical management.

Need for the study

The literature review has shown how the healthcare professionals and infrastructure was not equipped to contain the pandemic. The dearth of digital infrastructure, skilled professionals, rural healthcare, and lack of integration were raising concerns of policy experts. The stakeholders of Primary Healthcare emphasized the need for Infrastructural

development in terms of digitization, modern tools, and strengthening the skill force. The literature highlighted the Passive response from the private healthcare sector, importance of Digitalisation of Health care, Negative Impact on Health, and the well-being of healthcare workers in terms of the Increased level of burnout and emotional distress. Further, it was seen that there is a negative Impact on Healthcare infrastructure in terms of Lack of workforce, resources, and skills.

The key concern for the stakeholders of healthcare needs to be apprehensive about developing sustainability, growth, and self-reliance. The studies from the literature highlight recommendations and suggestions from healthcare experts that are focused only on the kind of healthcare. There is an extensive need for collective perspectives from public health, primary healthcare, and as well as tertiary health care with scientific rigor. Hence the present study aims to understand the collective suggestions and recommendations for strengthening and building self-reliance for healthcare post-pandemic era.

The most important concerns that need scientific scrutiny include the following.

- How to revive the healthcare sector from the impact of the pandemic?
- Critically evaluate the initiatives taken so far and proposed measures to deal with the pandemic by GOI
- How to evolve strategies for restructuring, strengthening, and integrating healthcare services into the process of Indigenous and self-reliance?

Objectives of the Study

The overall aim of the study is to lay out a draft policy framework to facilitate self-reliance in healthcare and pandemic preparedness. Specifically, the study has the aims to

1. Evaluate the adequacy of the existing policy and schemes for the healthcare sector.

2. Identify impediments in implementing the various measures/ initiatives taken by GOI
3. Pool together, examine, and shortlist the policy perspectives of varied experts to provide a basic framework for pandemic preparedness.

Methods

The aims of the study were approached by Stake Holder Survey (SHS) and Key informant Survey (KIS). The Stakeholder survey aims to reach out to the professionals in the respective domains/sectors through a survey-based method, and the collected data would be both qualitative and quantitative. Further, detailed explanations with respect to procedure and administration have been discussed briefly in the following sections. The KIS aims to collect data from experts who are proficient and competent in their respective domains/sectors, both from India. These experts were asked to identify challenges along with explanatory notes and the recommendations were sought.

Stakeholder surveys are a quantitative method based on a questionnaire to gather information from various stakeholders. This method serves as a tool to monitor, evaluate, plan, and policy-making process (Sadashiva, M., 2010). The *key informant* refers to a person with whom an interview about a particular organization, social program, problem, or interest group is conducted. Key informant interviews are in-depth interviews of a selected group of experts who are most knowledgeable of the organization or issue. It is often used as a part of program evaluations and need-based assessments (Lavrakas, P. J., 2008). According to WHO (2001) “Key Informant” is based on the origin of the survey methodology, which is used in the domain of social, political, and anthropological research. A Key Informant is defined as someone knowledgeable about the system. The alternative methods used in the KIS approach

are (a) Paper-based questionnaires, (b) Telephonic surveys, and (c) Questionnaire sessions at meetings.

Procedure

Stakeholders from healthcare sector were contacted through telephonic interviews and also by sharing the google document. Information was collected using open-ended questions and Likert-type questions. A sample of 50 healthcare experts representing was approached to take part in the survey (SHS & KIS). Removing the incomplete survey responses 23 respondents' responses were considered for the analysis.

The Key informants were requested to provide free narrative responses without any limit for the length of their answers to the open-ended questions. The focus of the questions was on three critical issues (a) the impact of the pandemic on the sector/subsector, initiatives taken so far and the direction in which they seem to go in the future (the intent of policymakers), (b) what the strengths and limitations of these initiatives are and (c) what specifically need to be done in the future.

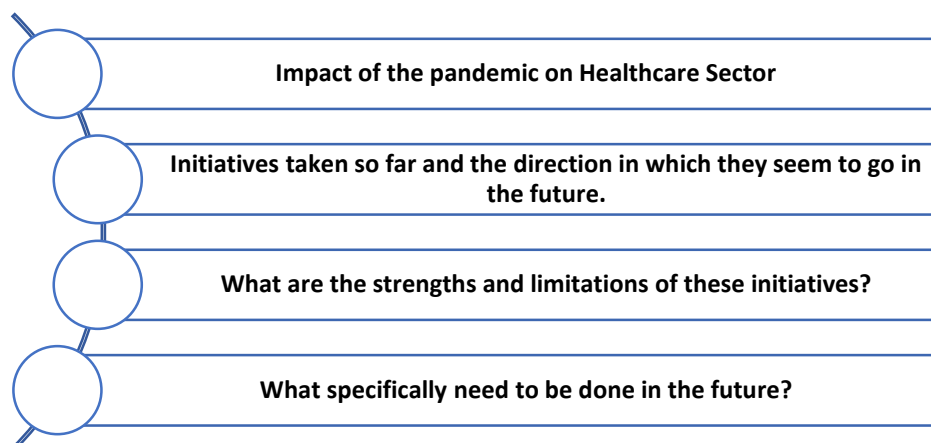
Administration

A comprehensive master list of key informants was gathered from the expert, interest groups, and associations from healthcare organizations. Initially, Key informants from health sector were selected using a stratified sample method and the first batch of key informant lists was prepared. Before rolling out the survey, personal telephone contact was made to give a brief account of the objectives and scope of the study. With informed consent and willingness to participate in the study the concept note with Key Informant Survey was mailed to health care professionals and experts. We had reached out to 50 experts, 10 experts for Key

Informant Survey and 40 SHS. The rationale for the generating narrative question for the healthcare sector was decided based on four key points (as shown in the figure below).

Figure 1

Showing the four key rationale points for KIS



Analysis of Data

The obtained responses through the various narratives were examined to Identify the commonality based on the commonality responses were categorized into five themes namely. These categorized responses were reviewed by a panel of two reviewers and their observations and recommendation were obtained.

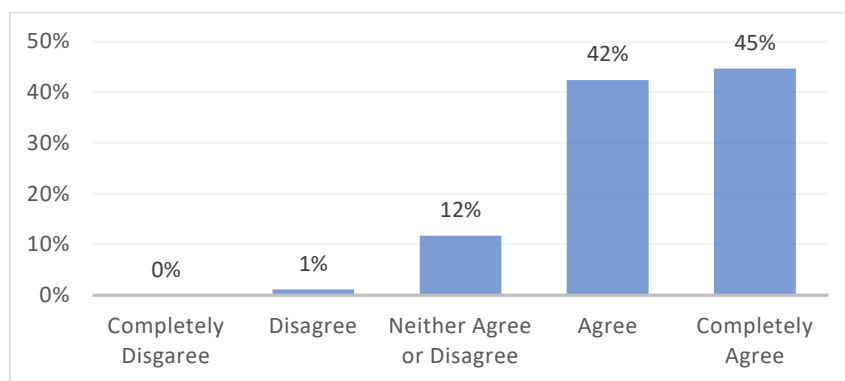
Results and Discussion

About 87 pc of the respondents have stated that the pandemic has a positive impact on the health sector in terms of broader public realization of the role played by healthcare workers, expansion of telehealth, remote health care has become a reality, social cohesion and conscience among people helped to understand the existing gaps in the health care system, recognition to indigenous medical health care, intergenerational social integrity was enhanced, investments in the digitization of health care increased, flexibility in the

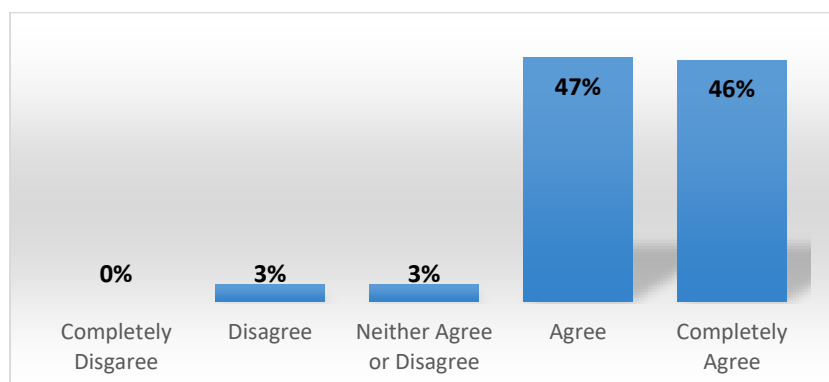
regulations of health care sector for more innovation, a surge in the mass critical care, patient administration systems (PAS) have been updated to accommodate different clinic templates and teamwork of health care workers has improved.

Figure 2

Positive impact of pandemic on the healthcare sector



On the other hand, 93 pc have stated that it had a negative impact in terms of limited access to advanced diagnostic testing and therapeutic modalities, usual health care was either cancelled or postponed, physical and mental exhaustion of health care workers, difficulty in procuring additional manpower, equipment, consumables, and other resources, differential distribution of services between urban and rural areas, created fear, stress, and stigma with minimized social interaction not directly related to health. Adding to this high mortality rate, especially among the elders, and lack of adequate medical equipment to treat the patients.

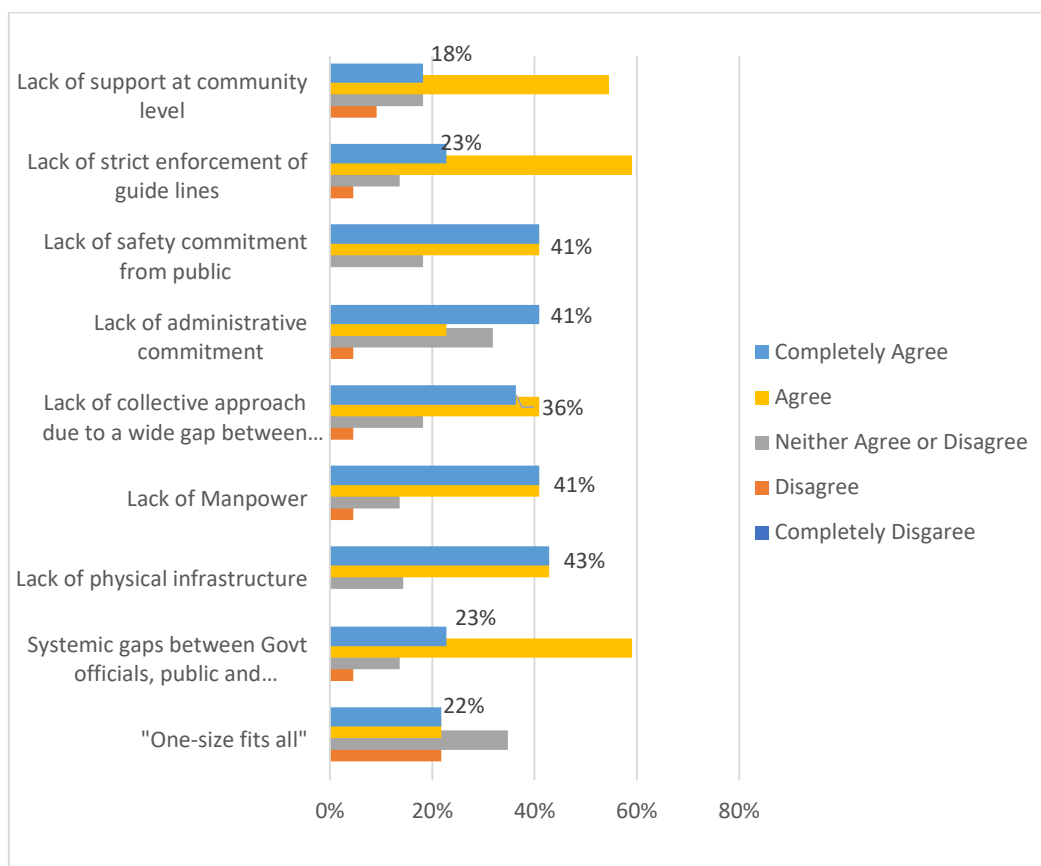
Figure 3*Negative impact of pandemic on the healthcare sector*

Nearly 35 pc of the respondents are natural about the strategy "One size fit for all," while 44 pc of them opined that a common strategy can be used irrespective of the difference in the health sector. Around 59 pc of the respondents opined that there are systemic gaps in the form of state and central controlling mechanisms, and medical and administrative officials in healthcare governance, and 86 pc of the respondents felt that lack of infrastructure is the main impediment in dealing effectively with the pandemic.

Around 82 pc of respondents felt that dearth of manpower in terms of various health care professionals is one of the challenges in dealing with pandemic. 76 pc of the group opined that lack of coordination between public and private medical is perceived to be yet another impediment in dealing with the pandemic. In addition, strict enforcement of policy and guidelines, community involvement, and administrative commitment were also perceived as impediments in dealing with the pandemic (See Figure 4).

Figure 4

Impediments in dealing effectively with pandemic



The obtained responses through the various narratives were examined to Identify the commonality based on the commonality responses were categorized into five themes namely (a) Quality healthcare (b) Safety (c) Infrastructure (d) Public health and (e) Capacity building, respectively. These categorized responses were reviewed by a panel of two reviewers and their observations and recommendation were obtained. Based on the review and validation of two experts from healthcare. Following recommendations for the healthcare post-pandemic era are summarised in the figure below.

Figure 5*Summary of recommendations from KIS***Lessons from Pandemic**

India having a population of more than 1.38 billion is one of the seriously affected nations due to COVID-19. The diversity of the Indian population in terms of urban-rural, central-state, semi-urban, metropolitan, literate – non-literate, and rich-poor have complicated the effective management of healthcare services including mental healthcare. The pandemic preparedness, strategies, and actions determine the effectiveness in responding to pandemic scenarios.

- 1. The dearth of healthcare professionals has been a major constraint on the public health system in India. Hence there is a need for a policy to strengthen the manpower in the healthcare sector, especially in public healthcare.** Training the healthcare professionals (Medical, Nursing, Technicians, Paramedical, and Supports staff) and the Establishment of healthcare educational institutions are to be strengthened.
- 2. Promoting Indigenous and alternative medical systems -** The establishment of health care centres in rural and remote areas by promoting Indigenous, alternative

medical systems (AYUSH), in turn, will ease the load of tertiary health care and most of the rural population have faith in traditional healing systems.

3. **Measures to Enhance Self-reliance in Medical services through EPS.** There is a need to encourage pharmaceutical companies in the research and development of medicines to deal with the pandemic. Need to promote indigenous innovations in medical technology in the forms of medical testing equipment, instruments, life support systems, oxygen concentrators, etc.,
4. **Scale-up** philanthropists to invest in the tertiary medical system in the form of specialized Intensive Care Units, Advanced diagnostic support services, and specialized medical personnel units.
5. **Develop public accountability practices by involving the community** - By enrolling and engaging the public in creating awareness and educating the general mass to adhere to safety and health hygienic procedures.
6. **Delegating individual responsibilities in promoting Covid appropriate behaviour** - Creating awareness on Covid appropriate behaviour and Vaccination hesitancy.
7. **Promoting the participation of all stakeholders to practice pandemic preparedness.** - Steps need to be taken for simulating a pandemic-like situation to test the infrastructure preparedness and identify the gaps.
8. **Mental Health** – Post pandemic there will be an increased role of mental health professionals to educate the public about the psychological effects of a pandemic, motivating them to adopt health promotion strategies, integrating mental health into primary health care, coping strategies with Teleconsulting, empowering individuals, caregivers and providing mental health care to health care professional are essential. There is a need to bring mental health professionals to be part of the task force for

pandemic preparedness and to advise mental health policies and psychological interventions.

Model for Pandemic Preparedness

Major concerns of physical and mental health concerns were lack of preparation. There is an urgent need for preparing the next generation for pandemics. The following model can be effective in enhancing pandemic preparedness. The five components of preparedness are *Planning, Collaboration, Participation Empowerment, and Simulation*. Management of health services especially during pandemics requires coordination between the central ministries and state health departments. The various time-to-time regulatory and restriction procedure ordained through central and respective state government has been the primary source of conflict between the two. This has resulted in the ineffective distribution of medical supplies, testing facilities, life support systems, etc. Hence there is a need to strengthen state and central relationships. Health services in India lie in the hand of government and private management effectiveness. While state-owned medical institutions are concerned with providing medical services to all the needy, private institutions have exploited the situation to their benefit. A policy regulating both government and private medical institutions in providing services, especially during the pandemic needs to be framed for effective functioning for pandemic preparedness. We propose five pillars of pandemic preparedness.

Figure 6*Five pillars of pandemic preparedness*

The first pillar is to develop *a nationwide action plan* in response to the future pandemic situation. This includes identifying resources, taking stock of available infrastructure, risk assessment, consulting with key multidisciplinary stakeholders, and forming a rapid response team. The second pillar is *to establish an integrated authority* as a nodal agency to take timely decisions, allocate resources and prepare contingency plans through *collaboration*. The third pillar is to *ensure community participation* from all stakeholders of mental and physical health care providers. The fourth pillar is "*Simulation*", creating a drill or exercise in a fixed format to measure and monitor the quality of pandemic preparedness. The fifth and final pillar is *Empowerment*, by reflecting on the drill or exercise process, continuous feedback can be sought back across the stakeholders of health care professionals, and compliance audits can be carried out on regular basis to keep track of

infrastructure facilities and quality assurance. The Suggested measures to enhance Self-reliance in healthcare services are as follows.

- **Encourage** the pharmaceutical companies in the research and development of medicines to deal with the pandemic.
- **Promoting** indigenous innovations in medical technology in the forms of medical testing equipment, instruments, life support systems, oxygen concentrators, etc.,
- **Scale-up** public to invest in the tertiary medical system in the form of specialized Intensive Care Units, Advanced diagnostic support services, and specialized medical personnel units.
- **Develop public accountability practices by involving the community**
 - By enrolling and engaging the general public in creating awareness, educating the general mass to adhere to safety and health hygienic procedures.
 - Delegating individual responsibilities in promoting Covid appropriate behavior
 - Promoting the participation of all stakeholders to practice pandemic preparedness.

Conclusion

The COVID-19 pandemic has exposed several flaws in the healthcare system, some of which were previously unnoticed and others that had been overlooked. This necessitated a greater investment in healthcare infrastructure. The proposed model for pandemic preparedness will serve as a framework to facilitate the creation of a collaborative environment for public and private healthcare providers. Though R & D has been actively involved in fighting against the pandemic, the results of medical research and clinical trials need to authenticate evidence-based practices toward strengthening the healthcare system. Providing psycho-education programs to deal with pandemics and increase awareness.

Further, Alternative medical systems like (AYUSH) need to be promoted and accounted for

equally to ease the load of tertiary healthcare through evidence-based research. In the end, strengthening the pandemic preparedness and response plan in such a way that the remaining health services are integrated and learning from as well as accumulating experiences from previous pandemics are shared on a real-time basis.

Note /Acknowledgement

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