# A Health Policy Responses to COVID-19: Lessons Learned for Future Pandemics in Saudi Arabia

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## Abstract

Covid-19 has impacted almost all countries in various ways. Pandemics have occurred in the past and will occur in future. Hence, all countries must prepare for future pandemics with appropriate health policy responses. This study aimed to review research papers on health policy responses to Covid-19 in different countries so that the lessons learned from other countries can be used for health policy responses to future pandemics in Saudi Arabia. This aim was framed into four questions to facilitate the identification of papers. A Google Scholar search using search terms related to each research question was used to identify papers relevant to the topic. The identified papers were screened and selected through the PRISMA flow diagram. Finally, 22 papers were used for this review and discussed under each research question. Based on the findings in the reviewed papers, a list of health policy responses for future pandemics in Saudi Arabia was presented as the answer to the research question relating to the best practices that can be adopted by Saudi Arabia to deal with future pandemics.

**Keywords: Covid-19, health policies responses, future pandemics, country ranking.**

## Introduction

To save lives and livelihoods around the globe, the WHO outlined two strategic objectives. They included strategies to reduce the circulation of the virus by protecting individuals (especially vulnerable individuals at risk of severe disease or occupational exposure to the virus) and to prevent, diagnose and treat Covid-19 to reduce deaths, disease and long-term consequences. Eight policy briefs were also prepared by the WHO. These include surveillance, collecting Covid-19 contexts, Covid-19 testing, clinical management of the pandemic, achieving vaccination targets against Covid-19, maintaining the steps to prevent infection and control of Covid-19 in healthcare facilities, building trust and maintaining it using risk communication and community engagement and managing Covid infodemic (WHO, 2024).

According to Agyapon-Ntra and McSharry (2023) the effectiveness of policies in the decreasing order of impacts were facial coverings (8.8), restrictions on gatherings, workplace closures, cancellation of public events, stay-home needs, school closures, internal movement restrictions and closure of public transport (1.0).

The World Bank Group assisted developing nations in enhancing their pandemic response capabilities, bolstering disease surveillance, improving public health measures, and supporting the private sector in maintaining operations and preserving jobs. It spent $160 billion to support these countries financially, especially to protect the poor and vulnerable, support businesses, and

bolster economic recovery.  The Group paid particular attention to policies in these countries to ensure a successful response to Covid-19, institutional reforms in steering around the increased fragility, high pressure on resources and rapidly developing large-scale needs for service delivery. A strong, flexible and responsive civil service is essential to implement policies to control the pandemic with minimum effect on the economy of the country, risk management, access to emergency contingencies and systems and processes for effective and rapid procurement of life-saving materials. Institutional reforms for a successful response to the pandemic include the creation of a database of country actions, treasury management, and anti-corruption measures. Policies are necessary for quick, equitable and effective vaccinations. People's trust in the positive effect of vaccination is important. These policy initiatives face three main challenges: (1) managing a public health emergency aimed at controlling the virus, which includes identifying and treating affected populations; (2) addressing widespread food and livelihood insecurity caused by the enforced halt of economic activities, leading to disrupted food supplies; and (3) implementing emergency powers to tackle the crises and ensure public safety. The speed and scale of the spread of the pandemic and corruption risks contribute to these challenges. Protection of livelihoods with compensations for job losses and adequate wages for those in services are also required. In countries, which are ruled by one central government under which many state governments operate, there should be coordination between the two (Group, n.d.).

The Strategic Preparedness and Response Plan (SPRP) of WHO are-

- − Pillar 1: Country-level coordination, planning and monitoring.
- − Pillar 2: Risk communication and community engagement.
- − Pillar 3: Surveillance, rapid response teams and case investigation.
- − Pillar 4: Points of entry.
- − Pillar 5: National laboratories.
- − Pillar 6: Infection prevention and control.
- − Pillar 7: Case management.
- − Pillar 8: Operational support and logistics.
- − Pillar 9: Maintaining essential health services during an outbreak.

In addition, the Global Humanitarian Response Plan (GHRP) of the UN are-

- − SP 1: Contain the spread of the Covid-19 pandemic and decrease morbidity and mortality.
- − SP 2: Decrease the deterioration of human assets and rights, social cohesion and livelihoods.
- − SP 3: Protect, assist and advocate for refugees, internally displaced persons, migrants and host communities particularly vulnerable to the pandemic.

These guidelines are used in many papers to measure the health policy responses in different countries. (Mustafa, et al., 2022)

The 14 key functions of maintenance of essential health services are (Mustafa, et al., 2022):

1. Context considerations
2. Adjust governance and coordination mechanisms to support timely action.
3. Prioritize essential health services and adapt to changing contexts and needs.
4. Optimize service delivery settings and platforms.
5. Establish safe and effective patient flow at all levels.
6. Rapidly optimize health workforce capacity.
7. Maintain the availability of essential medications, equipment and supplies.
8. Fund public health and remove financial barriers to access.
9. Strengthen communication strategies to support the appropriate use of essential services.
10. Strengthen the monitoring of essential health services.
11. Use digital platforms to support essential health service delivery.
12. Life-course stages considerations (maternal and newborn health; child and adolescent health; older people. sexual and reproductive services).
13. Nutrition, noncommunicable diseases and mental health considerations.
14. Communicable diseases considerations (human immunodeficiency virus, viral hepatitis and sexually transmitted infections; tuberculosis; immunization; neglected tropical diseases; malaria).

The above short background adequately shows the range and scope of health policy responses to Covid-19 at the global level. However, it is necessary to undertake a detailed review of the topic to enable Saudi Arabia to design its health policy responses to future pandemics. Such a review is very important considering that Saudi Vision 2030 (Saudi Arabia, 2016) targets a healthy population to make them economically efficient assets of the country. The aim and research questions of this review are provided below to facilitate the selection of papers.

**Aim**
This review aims to review research papers on health policy responses to Covid-19 in different countries so that the lessons learned from other countries can be used for health policy responses to future pandemics in Saudi Arabia.

**Research Questions**
The research questions framed for this paper are:

a) How have different countries implemented their health policy responses to Covid-19?

b) Which countries performed best in this respect? What were their health policy responses?

c) Is it possible to identify the best practices from the best-performing countries?

d) Can these best practices be adopted by Saudi Arabia for health policy responses to future pandemics?

The methodology adopted to answer these research questions using a review of the relevant literature is outlined in the next section.

## Methodology

Google Scholar was used as the search engine to identify papers relevant to the four research questions. Appropriate search term related to each research question was used to identify papers from the search engine. The following inclusion and exclusion criteria were used at the identification stage itself so that the process of screening and selection can be minimized.

Table 1: Inclusion and exclusion criteria

| Inclusion criteria | Exclusion criteria | Remarks |
|---|---|---|
| Papers in English | Papers in other languages | |
| Full-text papers | Abstracts | Abstracts containing useful information were included. |
| Only research papers and reports | Books, book sections, dissertations, editorials and comments | Not all pages are accessible in the case of many books and book sections. One book section was included. Dissertations are guided research. Editorials and comments are only opinions. One editorial was included. |

The papers identified from Google Scholar were screened and selected using the PRISMA flow diagram. Finally, 22 papers were selected deliberately based on their scope to answer the research questions and included in this review. These are discussed in the Results section under each research question. The PRISMA flow diagram is shown in Figure 1.
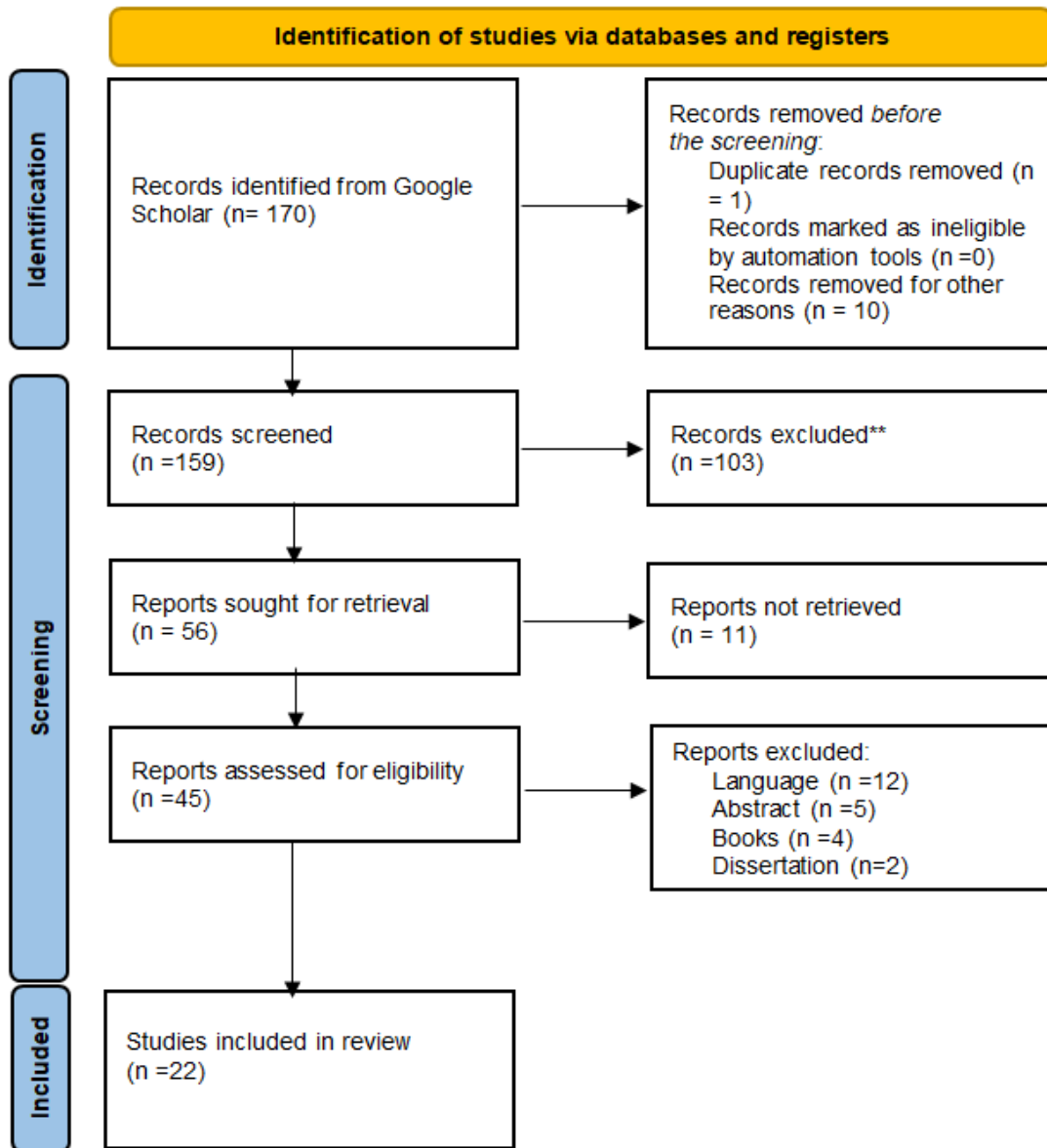
Figure 1: PRISMA diagram

## Results

The results broken down by research question are summarised below.

**How have different countries implemented their health policy responses to Covid-19?**

Search term: Health policy responses to Covid-19 by countries

Using quantitative analysis of secondary data on 177 countries, Dewi, Azzahra, Benedictos, Suardi, and Dewi (2020) evaluated the appropriateness of the government's policy response in dealing with the Covid-19 pandemic based on the Global Health Security Category (GHSC) and

the pandemic score. Of these 177 countries, 37 were under-reaction and least reaction. GHSC and pandemic scores (doubling time) were positively related. High category pandemic score (fast doubling rates) was high in 59 out of 177 countries (33.3%). This paper was published in 2020 when the pandemic had just started. It may be too early to evaluate policy differences among countries.

By employing a model that incorporates age distribution, fiscal resources, healthcare capabilities, informal sector participation, and interpersonal contact frequency across various settings, Alon, Kim, Lagakos, and VanVuren (2020) demonstrated that universal lockdowns were not as effective in developing nations, yielding fewer lives saved relative to GDP. Conversely, policies tailored to specific age groups proved to be significantly more effective, directing limited public funds to protect fewer older individuals. Additionally, closing schools is more impactful in saving lives in developing countries, as it significantly reduces secondary transmission between children and older adults living together. Five factors determining the nature of policies to be followed by developing countries include younger population, lower fiscal capacity, widespread informality, lower healthcare capacity, more frequent person-to-person contacts and higher frequency of intergenerational cohabitation. People in developing countries do not borrow against future earnings. This leads to the maintenance of non-negative assets, hand-to-mouth consumption, and precautionary savings to meet unexpected expenses. It establishes an additional feedback loop between epidemiological and economic trends as people reduce their spending to boost their precautionary savings in reaction to the pandemic's emergence. This was also an early-stage paper.

Greer, Fonseca, Raj, and Willison (2024) analysed public health strategies during the initial wave of Covid-19 (March- September 2020) in Brazil, India, and the U.S. to explore how the interaction of institutions within a complex federal structure influenced the response to the pandemic. A common trend of powerful federal executive agencies facing few limitations was noted. In each instance, when federal leadership fell short in terms of public health policy, smaller subnational states had to step in to address these shortcomings, often without adequate resources.

An examination of 154 Covid-19 Preparedness and Response Plans (CPRPs) from 106 countries, conducted through a two-tier document review protocol, revealed strong alignment with key emergency response pillars such as surveillance (99%), laboratory systems (96%), and case management specific to Covid-19 (97%). However, less than half (47%) addressed the maintenance of essential health services, and only 41% established mechanisms for health system-wide involvement in emergency planning. Additionally, 34% took subnational service delivery into account, 95% included infection prevention and control (IPC) measures, 29% addressed quality of care, 24% allocated budgets for essential health services, and just 7% included monitoring and evaluation components. Mustafa et al. (2022) suggested adopting a proactive strategy that incorporates suitable activities, resources, and monitoring mechanisms into essential health services to reduce excessive mortality and morbidity. This involves

enhancing subnational health services through local stakeholder engagement in planning, maintaining a dedicated focus on emergency operations to ensure health system resilience for non-emergency services, considering all quality domains in health services alongside IPC, and developing robust monitoring capabilities for timely and accurate tracking of health system functionality, including service utilization and health outcomes. This paper used data one year after the pandemic started.

Using a disproportionate policymaking approach to evaluate regional variations in a country's average crisis response, Purnomo et al. (2022) discovered that six ASEAN countries exhibited uneven responses to the COVID-19 pandemic. Thailand ranked highest and was identified as the most prepared country for global health security, while four other countries were classified as taking standard measures. Conversely, Laos, Cambodia, Malaysia, Singapore, Indonesia, Myanmar, and the Philippines were deemed less prepared and slow to react, even as these nations experienced ongoing rapid pandemic growth.

Using mixed methods to analyse profile reports from 29 EU countries, Rees, Batenburg, and Scotter (2024) noted that while many nations in Europe took similar actions, the outcomes varied significantly. The cross-national analysis identified a predictable trend: lower efficacy in Covid-19 responses correlated with higher rates of cases and deaths. However, considerable differences emerged among countries with similar efficacy indicators, suggesting that the specific combination and timing of Covid-19 response measures may be equally as crucial as their overall effectiveness.

**Which countries performed best in this respect? What were their health policy responses?**

Search term: Best performing country concerning health policy responses to Covid-19

During the early stages of the pandemic, China, South Korea and Brunie performed best with the lowest pandemic scores (Dewi, Azzahra, Benedictos, Suardi, & Dewi, 2020). In 2021, among the ASEAN countries, Thailand ranked the best in terms of preparedness for Global Health Security in the studies of Purnomo, et al. (2022).

Jamison, Lau, Wu, and Xiong (2020) created performance rankings for 35 countries by analysing the doubling times of Covid-19 cases and deaths at 25, 65, and 135 days into their respective pandemics. At day 25, there was only a slight variation in performance between countries, with most experiencing cumulative deaths that doubled in less than five days. However, by days 65 and 135, significant differences emerged among countries. By day 135, nine out of the ten countries with the best death rates were European, despite facing severe initial outbreaks. This suggests that rankings can shift quickly, underscoring the importance of using dynamic indicators. Overall, China, Ireland, and Italy were the top three performers in terms of case doubling time. In contrast, Brazil, Mexico, India, Indonesia, and Israel were among the seven lowest performers for both cases and deaths by day 135. Although there was a positive correlation between doubling times for cases and deaths, the differences indicate the value of

tracking both metrics, which may reflect variations in health policy responses across the countries analyzed.

Analysis of documents related to health policies against Covid-19 in Iran and nine selected countries (China, Japan, South Korea, Singapore, Germany, the United States, the United Kingdom, Spain, and Italy) by Raoofi, et al. (2021) showed almost similar policies among these countries, but with differing results. A map showing the health policy responses of these countries with changing times is presented in Figure 2.
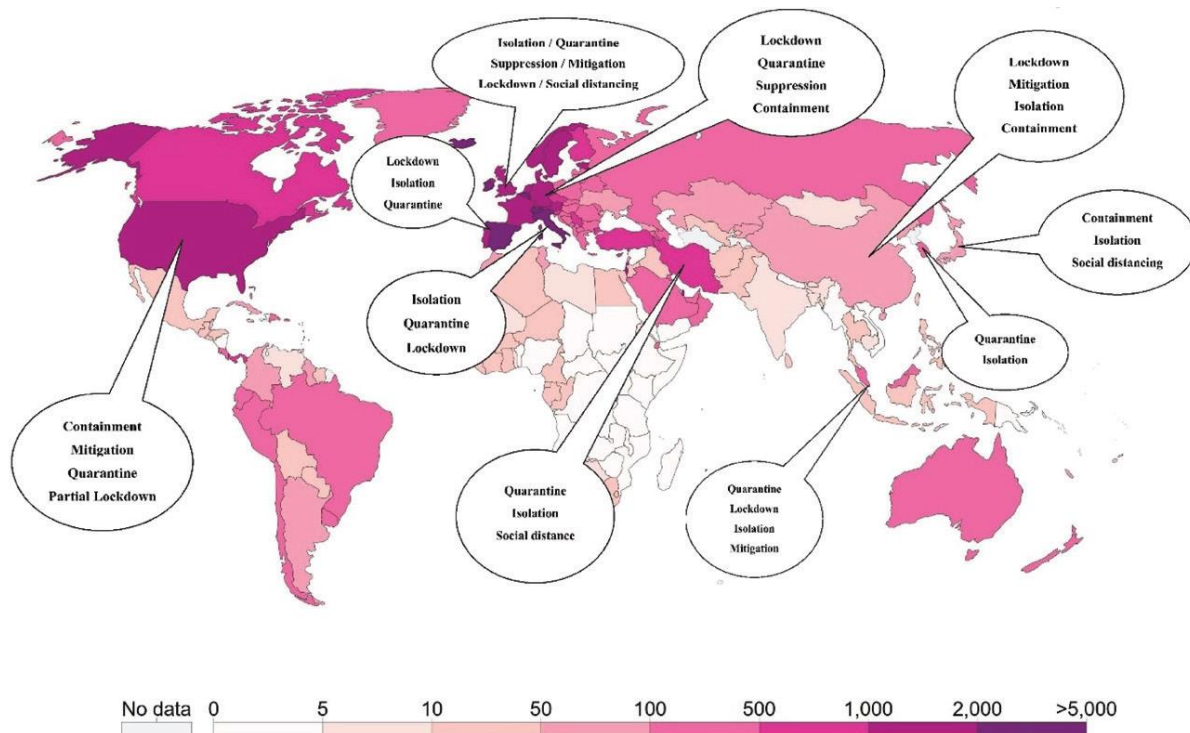


Figure 2: Policy contents of the 10 selected countries (Raoofi, et al., 2021)

The time interval between the first confirmed case and the first basic measures in these countries was also studied. In most cases, these countries first formed a high-level committee to decide on policy responses and ensure their implementation. The authors discussed how the policies on the six building blocks (service delivery, healthcare workforce, information, medical products, vaccines and technologies, financing and leadership/governance) of healthcare systems were implemented by these countries.

A multi-criteria evaluation that analysed population, healthcare, and economic data from 19 OECD countries found that factors such as population size, density, and the country's development stage influenced effective pandemic management. Policies prioritizing primary care and maintaining an adequate workforce proved more effective than those focusing on specialists,

partly due to public funding and access regulations. About two weeks after implementing measures like lockdowns and quarantines, no immediate effect was seen on healthcare efficiency at the national level. However, delayed lockdowns resulted in significantly reduced efficiency during the initial wave of Covid-19 in 2020. Economically, approaches that avoided general lockdowns were regarded as more efficient than those that implemented full lockdowns. There was a negative relationship between the strength of health policies and economic efficiency in the pandemic management. Moreover, government support for short-term work emerged as a positive strategy (Klumpp, Loske, & Bicciato, 2022). The study identified two distinct types of policies-

1. AUS, CAN, JPN, and NLD had early lockdowns in the first period, and consequent infection tracking led to a stable and, compared to other countries, highly efficient health system with a mean efficiency score above 0.90.

2. Similar policies were adopted in the Northern European countries of DNK, FIN, NOR, and SWE, to keep restaurants and primary schools open and rely on citizens adhering to social distancing recommendations themselves. This seems to be another highly successful strategy, as the mean efficiency score was constantly above 0.90. Furthermore, these states have highly developed public health systems.

3. South Korea slowed the spread of the virus and flattened the curve of new infections without shutting down the whole country on a red alert using intelligent and digital Covid-19 management, as well as persistent tracking, tracing, and testing of infected persons who were quickly identified and treated at an early stage, involving the police as required.

4. Italy and Great Britain implemented pandemic policies much later than other nations.

5. Slovenia implemented frequent performance-oriented reviews to contain the disease and change policies.

Studies in Denmark, Finland, Italy and the UK by Sariyer, Sozen, and Ataman (2023) showed that high-performance healthcare systems were more important than government response policies.

Stringent policies in countries like France produced more effective results compared to late and weak response to the pandemic by the USA. The health policy responses of India, El Salvador, Trinidad and Tobago, and New Zealand were over-response. At the time of their maximum response, the USA, Sweden, Switzerland, and Belarus showed policy under-reactions (Shafi & Mallinson, 2023).

In the studies of Giménez, Prior, Thieme, and Tortosa-Ausina (2024) New Zealand, Sri Lanka, Thailand, Malaysia, Australia, and Ghana emerged as the toppers for effective management of the pandemic without considering contextual conditions, followed by Iceland (0.975), Uruguay (0.967) and South Korea (0.964). Colombia (0.448), Chile (0.428), United States (0.391), Czech Republic (0.372), Argentina (0.353), Spain (0.343) and Belgium (0.079) occupied the last positions.

The above analysis demonstrated variations among countries concerning their health policy responses to Covid-19 and some countries were top-ranked on various attributes of health policy responses. Now we examine the possibility of identifying the best practices from the best performing countries although these are indicated in some of the above papers.

**What are the best health policy responses of the best-performing countries?**

Search term: Best health policy responses to covid from best-performing countries

Jamison D., Lau, Wu, and Xiong (2020) ranked 35 countries on their mid-pandemic performance (each having 5500 or more cases, collectively including 85% of the world's cases) as of 16 April 2020 and had reached 65 days into the pandemic by 21 May). They based the rankings on performance rankings based on doubling time in days of the total number of cases and deaths in a country, derived on five-day periods at day 65 with days 25 and 45 for comparison. The first five positions were occupied by China, Israel, Switzerland, Australia and Austria, respectively. These successful countries adopted policies that were specific, timely, and well-understood control measures against the pandemic. Performance differences can also happen due to delays in response implementation, low levels of preparedness and stringency of policies.

The two years of the Covid-19 pandemic resulted in markedly different death rates across European countries. Among the 30 countries with the highest overall fatalities, nine are in Central and Eastern Europe, despite the European Union's provision of vaccines to all member states. Vaccination rates play a significant role in explaining the excess deaths during the second phase of the pandemic. This experience underscores the importance and limitations of health policy at the European level. The findings support the idea that a collaborative approach between European and national authorities is effective for EU health policy (Farkas & Rácz, 2024).

Since 2010, the NHS has faced significant financial strain due to austerity measures, which impacted its pandemic preparedness. This resulted in a shortage of healthcare workers, a limited number of hospital beds, frequent bed occupancy rates that surpassed safe levels, and an inadequate supply of essential equipment like ventilators, MRI machines, and CT scanners. Although the policies needed to properly equip the NHS for the pandemic were costly, they were essential. Healthcare workers experienced immense pressure that took a toll on their mental well-being. These challenges should prompt the UK and the NHS to focus on strengthening the resilience of the health system, rather than reverting to austerity now that the immediate threat of the pandemic has diminished (Williams, 2024).

According to Imran and Javed (2024), health policy responses to Covid-19 in the USA, India and Brazil were seriously affected by common populist mechanisms like distrust for experts, contempt for institutions, and suspicion of "others". The leadership in these countries prevented effective management by politicising the crisis, aggravating social polarisation, and contradicting expert advice. The populist and nationalist orientation of the leadership evaded responsibility by blaming ethnicities for spreading the virus and by weakening societal solidarity.

The current sickness model of health policy stresses individual responsibility for health and Intervenes only when the sickness becomes acute. According to Thomas et al. (2024), this is an outdated policy and should be replaced with a new health creation policy. This will be a whole society approach to health in which everyone pulls all the available levers to create health in the places people spend their lives, not in hospitals, but through families, workplaces, businesses and within communities. The authors have conducted a detailed discussion with data and diagrams to support their proposal. Although this approach was recommended for UK healthcare, it is equally applicable to other countries. This health policy can also provide the basis for future responses to pandemics like Covid-19. The government should act not as a commander but as an enabler of the new policy.  The proposed policy change is shown in Figure 3.
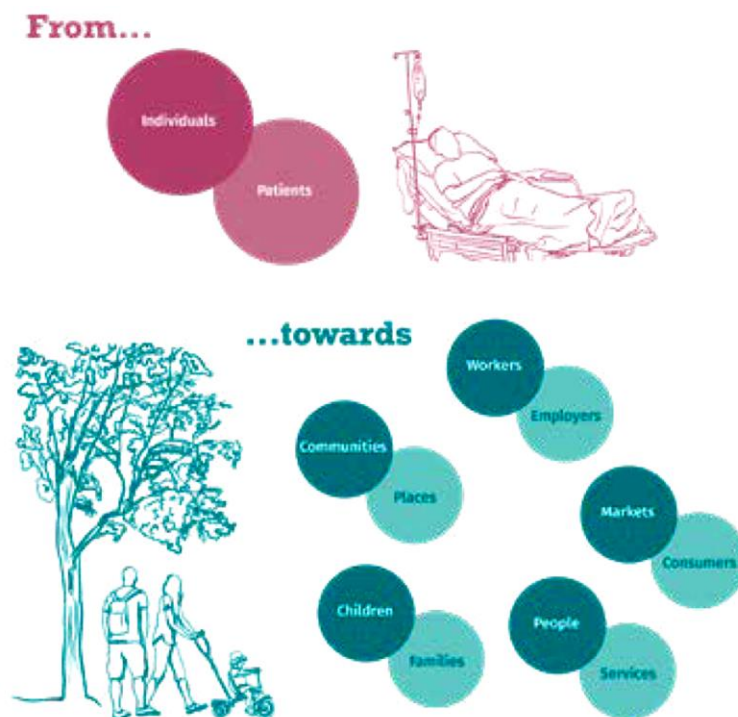


Figure 3: The new healthcare policy proposed by Thomas, et al. (2024)

The papers reviewed so far only ranked countries based on different parameters and using different methods. Best practices need to be derived from the findings. An attempt on this led to answering the fourth research question.

**Can these best health policy responses be adopted by Saudi Arabia for health policy responses to future pandemics?**

Search term: Health policy responses for future pandemics

Based on the African context, Fallah, Raji, Ngongo, and Ndembi (2024) listed leadership and governance, ensuring testing capacities and resources, public health authorities need to improve awareness of political leadership, active interactions with international organizations, partners and philanthropists, strengthening healthcare systems and coordination of different agencies involved in Covid-19 work, as the items required for healthcare policy responses for future pandemics.

Based on the Covid-19 experience, Omaghomi, Akomolafe, Ogugua, Daraojimba, and Elufioye (2024) proposed greater attention in the post-pandemic period on enhancing public health infrastructure, investing in digital health, and fostering international cooperation to prepare the country for future pandemics.

The use of big data analytics for forecasting pandemics needs to be the basis for health policy responses to future pandemics. Policy frameworks to support collecting, analysing, and sharing health data while adhering to regulatory requirements and international collaborations need to be integrated into future health policy responses to pandemics (Igwama, Olaboye, Maha, Ajegbile, & Abdul, 2024).

A set of five health policy responses for future pandemics was proposed by Chen, et al. (2024). They included prompt actions of containment and closure policies with dynamic adjusting, strengthening health system policies, comprehensive vaccination policies with universal access, equitable and free access to testing, diagnosis, and treatment for all and strengthening the resilience of health systems.

The preparation for pandemics should be based on purpose-driven science in priority areas and enhance scientific and organizational capabilities to accelerate the development of products from MCM candidates. A robust and consistent management system and governance are essential for a swift medical response to future pandemics (Lee, 2024).

Thus, Saudi Arabia can prepare for future pandemics using the following health policy responses, extracted from the above review-

1. Surveillance, collecting Covid-19 contexts, Covid-19 testing, clinical management of the pandemic, achieving vaccination targets against Covid-19, quick, equitable and effective vaccinations, maintaining the steps to prevent infection and control of Covid-19 in healthcare facilities, building trust and maintaining it to support vaccination, using risk communication and community engagement and managing Covid infodemic.

2. Restrictions on gatherings, workplace closures, cancellation of public events, stay-home needs, school closures, internal movement restrictions and closure of public transport.

3. Leadership and governance, ensuring testing capacities and resources, public health authorities need to improve awareness of political leadership, active interactions with international organizations, partners and philanthropists, strengthening healthcare systems and coordination of different agencies involved in Covid-19 work. Enhancing public health infrastructure and investing in digital health

4. Big data analytics for forecasting pandemics needs to be the basis for health policy responses to future pandemics. Policy frameworks to support collecting, analysing, and sharing health data while adhering to regulatory requirements.

5. Purpose-driven science in priority areas and enhance scientific and organizational capabilities to accelerate the development of products from MCM candidates.

6. Economic aspects: institutional reforms in steering around the increased fragility, high pressure on resources and rapidly developing large-scale needs for service delivery. A strong, flexible and responsive civil service, food and livelihood protection, addressing job losses.

The recommendation for a new approach by Thomas, et al. (2024) can also be considered as a long-term policy initiative.

# Discussion and Conclusions

**Discussion**

The review highlights diverse approaches countries have adopted to manage the Covid-19 pandemic, shedding light on successful strategies and areas needing improvement. The studies reviewed underscore that countries' health policy responses varied significantly and were influenced by factors such as governance structures, healthcare capacity, economic resources, and cultural norms. A common theme was the necessity for timely, decisive actions tailored to each country's context, which often determined the effectiveness of the response. For instance, the proactive measures of countries like South Korea and New Zealand, focusing on extensive testing and tracing, illustrate the value of swift and precise strategies (Giménez et al., 2024; Jamison et al., 2020). The disparity in responses and outcomes, as seen in the varying death rates and policy effectiveness across Europe, emphasizes the need for adaptable and evidence-based health policies (Farkas & Rácz, 2024).

Also, the challenges faced by federal structures, where coordination between different levels of government was vital, became apparent in countries like the US and Brazil. The need for transparent communication and trust-building with the public was emphasized across multiple contexts (Greer et al., 2024). There was also a consensus on the necessity for robust public health infrastructure and investments in healthcare capabilities to better prepare for future pandemics (Fallah et al., 2024).

**Conclusion**

For Saudi Arabia, the lessons from global experiences during the pandemic provide critical insights into shaping its future health policy responses. Effective future pandemic management will require a multifaceted approach: enhancing surveillance systems, fostering leadership and governance, and investing in digital health and public health infrastructure (Lee, 2024; Omaghomi et al., 2024). The role of big data analytics in predicting and managing future pandemics cannot be overstated, underscoring the need for comprehensive data policy frameworks (Igwama et al., 2024).

Moreover, ensuring equitable access to healthcare resources, including vaccines and treatments, remains paramount. As Saudi Arabia progresses towards its Vision 2030, integrating these insights into a resilient, dynamic health policy framework will not only bolster its pandemic response but also contribute to a healthier, economically robust population (Saudi Arabia, 2016). Leveraging international collaboration and building a responsive healthcare system will be essential strategies for safeguarding against future global health threats.

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