

The COVID-19: Saudi Government's Comprehensive Guide to Safety Measures Analysis with Big Data

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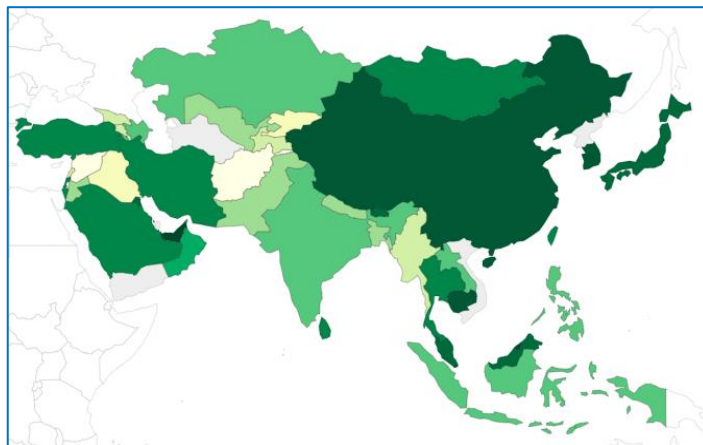
Abstract

Saudi Arabia is among the most capable countries in combating COVID-19 and ensuring rapid recovery. Even the most popular and powerful nations like the UK, USA, China, Russia, and others are still fighting COVID-19. The high death rate of these nations is significant evidence, yet they are looking for solutions to save their citizens. There are pitfalls arising when violating WHO guidelines and when easing restrictions are made. Data from the various country and research details are essential services that WHO provides to countries during health emergencies such as COVID-19. WHO evaluates the data and research, and then advises them on how to respond. World Health Organization teams work with experts across the globe to develop this guidance. It is intended for health decision-makers who can adapt the information to their country and context. In this article, we will examine how the Kingdom of Saudi Arabia (KSA) combats COVID-19 and attempts to normalise the lives of citizens and residents. We are going to discuss several measurements, such as Saudi government protocol, health authorities' support, people's involvement, etc. Our study examines Artificial Intelligence (AI) as a crucial tool for understanding, preparing for, and combating COVID-19 (Coronavirus). Data has been collected from the World Health Organization's (WHO) repository and the Global Research on Coronavirus Disease Database, which links to other similar COVID-19 database systems. Using the available dataset, we intend to compare our methods with those of other nations by using the Weka Machine Learning tool through data pre-processing methods, evaluation methods, and other methods of analysis. Keywords: COVID-19, Pandemic preparedness, Preventive measures, SARS-CoV-2 Management, Kingdom of Saudi Arabia.

1 INTRODUCTION

In 2019, a novel Coronavirus (COVID-19) was caused by SARS-CoV-2, which originated in China. Globally, 618,268,236 cases and 6,533,864 live losses have been reported as of 21 September 2022. There are only a few therapeutic options for COVID-19, so supportive care is the most significant part of clinical management, aiding the patient's recovery by supporting the patient's physiology (Dagens et.al. 2020; worldmeters. 2022). The World Health Organization (WHO) has published a list of considerations for decisions about normalising people's lives during the pandemic situation and, it circulated more than 100 documents and guidelines about COVID-19 since January 2020, including test cases, safety measures, quarantine procedures, controlling and preventing COVID-19 transmission, and health worker protection. Because of the large population and economic factors, many countries are unable to follow all the guidelines, resulting in increased pandemic vulnerability.

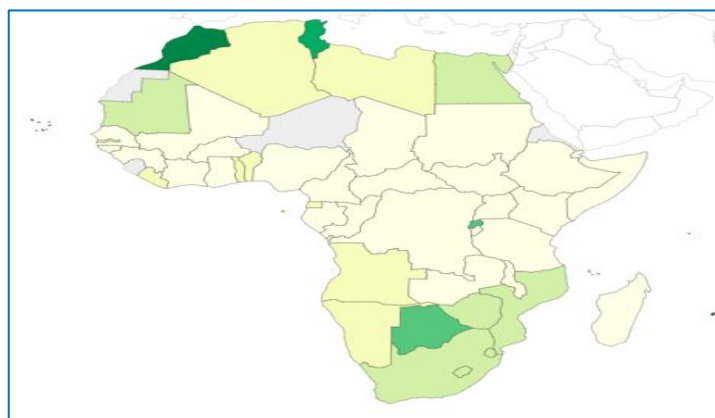
A major responsibility of the government is to build the capacity for finding, isolating, testing, monitoring, and caring for COVID-19 patients. This is more significant in densely populated countries and cities. Several low and middle-income countries (LMICs) need technical and financial assistance to be able to respond successfully to COVID-19. Many African, Asian, and Latin American nations are rapidly developing the capacity for reverse-transcription polymerase chain reaction (RT-PCR) testing and vaccination programmes for COVID-19. Still, LMICs follow the preliminary guidelines given by the WHO, such as contact tracing, quarantine, promotion of public health measures, handwashing, respiratory etiquette, and physical distancing. COVID-19 vaccine has been administered to 67.9% of the global population as of 21/9/2022. The total number of vaccination managed globally exceeds 12.69 billion, and 3.78 million doses are given on a daily basis. The number of people in low-income countries who have received a single dose is only 22.5% (Statistics and Research Coronavirus., 2022). Based on the data given by the WHO authority, 71% of people in poor economic countries are not vaccinated. It is the primary responsibility of the government to take the immediate initiative to implement a vaccination programme. More significant than any country's economy are the lives of its people.



Source: <https://ourworldindata.org/COVID-vaccinations> as on 11/1/2022

Figure 1: Fully And Partially Vaccinated Countries From Asia

Figure 1 shows that out of around 40 countries in the Asian region, only a few, such as China, Saudi Arabia, the United Arab Emirates, Malaysia and Cambodia offer the third booster dose. The remaining nations are still completing one or two doses of vaccination. In figure 2, it shows a list of African Region vaccinated countries. 90% of the region has not even completed a one dosage of vaccination. In the middle east region KSA is one of the most successful examples of vaccine implementation and combat with COVID-19 and ensuring the normal life of its citizens and residents.



Source: <https://ourworldindata.org/COVID-vaccinations> as on 11/1/2022

Figure 2: Vaccinated countries from Africa

Many healthcare workers are likely to have already been infected in the community or at work (Beeching et.al., 2020). SAR-CoV-2, an emerging high-threat virus, has infected healthcare workers throughout the world. To date, however, in the KSA, where infection prevention and control are taken seriously. Epidemiological records in KSA suggest more than 70% of human-to-human transmission has occurred in family clusters. As per the most recent report from the WHO, the new variant of SARS-CoV2 Omicron and Delta not only affected elderly people, but it also affected the younger generation. Cardiovascular disease, respiratory disease, and diabetes are the leading causes of death and serious health disease among people with any past history of these conditions (Bedford et.al., 2020).

Nevertheless, over-regulation and a failure to facilitate appropriately three large trials - the Solidarity Trial of the WHO, the Discovery Trial of France and the Recovery Trial of the United Kingdom - in terms of improving health care globally, it represents a missed opportunity. (Tikkinen et.al., 2020). As part of the crucial period from March 2020 to March 2021, Saudi Arabia faced a difficult situation balancing the demands of responding to COVID-19 with providing health and emergency services to patients suffering from other illnesses with the help of health workers, the Federal Government, local authorities, and citizens. LMICs are failed to provide basic needs of health care and social services for their citizens due to unexpected pandemic circumstances. As a result of the new variant of COVID-19, even a modest increase in mortality should have been extremely challenging. The WHO database on coronavirus disease provides links to related initiatives. An early stages of diagnosis of any type of diseases can save human lives, that can be possible by Artificial Intelligence based on the existing data. Our research has used the Data Mining tool to preprocess the data that has been collected from WHO and COVID-19 Worldometer, another similar website. The dataset was then analysed through various comparison schemes.

2 RELATED STUDY

In the wake of the COVID-19, physical distance norms and national lockdowns have led to an inevitable surge in the use of digital technologies. Around the world, people and organisations have had to adjust to completely different ways of

working and living. As a result of digitalisation, companies and educational institutions are shifting to work-from-home. The study could contribute to a better understanding of the digital divide's consequences and causes. Moreover, the issues of net neutrality and zero-rating plans should be scrutinised. The research will also focus on the impact and consequences of internet shutdowns, a tactic often employed by countries. Since the COVID-19 pandemic, there has been a dramatic shift in digital usage that has affected all aspects of life and work. Our response to and shaping of these trends will have a great impact on how this change plays out. A number of key trends and research issues were outlined in this article (Rahul et. al., 2020).

COVID-19's ongoing pandemic has affected society at large, including the scientific community. A remarkable amount of new research literature has emerged as a result of the scientific community's response to COVID-19. COVID-19 has a large amount of open data and substantial scientific interest, which has made it an ideal use-case. Natural language processing (*NLP*) is able to uncover latent knowledge from an unstructured scientific text in this work (Trewartha et.al.,2020). For the prevention of infection, now is a good time for planning and writing grants, writing that long-anticipated review article, and submitting papers even if the biology mechanism is not fully established yet. There are also numerous funding opportunities for human connection research, which is important for our physical, mental, and professional wellbeing. The study examines 750 health workers and health practitioner provides data on the incidence and prevalence of SARS-CoV-2 in a vulnerable workforce. The research team is also conducting appropriately powered randomised interventional trials. These emergent research programmes can only be successful with extramural support. (Omary et.al., 2020).

During the process of creating emergency guidelines, serious methodological issues were discovered, according to a previous study. The article suggests three critical mechanisms for the production of emergency guidelines: "living" guidelines, guidelines that are produced in an emergency, and guidelines that are produced using a validated tool, such as the Appraisal of Guidelines for Research and Evaluation II (AGREE II) (Dagens et. al., 2020). Human suffering and deaths are being claimed by the COVID-19 pandemic. Developing new drugs is not an easy task, and deep learning can help speed this process by predicting which existing drugs or brand-new drugs will be most beneficial for treating and controlling the pandemic. In order to minimizing the spread of COVID-19 and reduce the economic damage, Moreover, AI is a powerful tool that can disseminate critical information worldwide while limiting the spread of false information. Certainly, AI will not be the only factor that leads to a successful antiviral drug or vaccine against SARS-CoV-2. Yet, at the very least, the scientific community should realize AI technology is powerful enough to speed up the process. The AI tool is capable of helping to develop effective vaccines and antivirals (Ahuja et. al., 2020).

The paper examines various ways in which AI can assist in fighting COVID-19. It concludes that AI has yet to prove itself effective against COVID-19, hampered by a lack of data. For AI to be an effective tool against future epidemics and pandemics, it must strike a careful balance between public health and data privacy. Humans and AI must interact rigorously to overcome these constraints. The pandemic may cause governments to continue extraordinary surveillance of their citizens long after the pandemic ends. Therefore, concerns about the erosion of data privacy are legitimate. Even if the authorities may have to gather more personal information than many people would find acceptable, flexibility in gathering and analysing big data is essential in combatting the pandemic (Naude et. al., 2020).

3 SIGNIFICANCE OF RESEARCH

The WHO recommends "test, test, test" as the key concept of controlling spread of SARS-CoV-2 and its medical appearance, COVID-19 (Beeching et. al., 2020; WHO, 2020). Previous pandemics have recommended detection, assessment, treatment, escalation, and recovery phases, and the current assessment phase emphasises the need to actively find, test, isolate, and treat cases (Watkins et. al., 2020). During the different phases of the pandemic, the WHO has provided detailed guidelines for identifying and testing cases. In addition to finding cases, contact tracing is critical to tracking and breaking chains of transmission of COVID-19. The WHO provides technical guidance on contact tracing and explains how contacts are identified, and how to monitor those contacts. It is unclear how many true asymptomatic infections there are in this case, but the levels appear to be relatively low and are not a major driver of transmission. The findings contradict a WHO report released in February based on COVID-19 data collected in China (Michael et. al., 2020). Global pandemics can also have a negative effect on people's mental health. In a COVID-19 brochure, mental health services are emphasized as a critical component of preventing a second global health emergency. A number of recommendations are provided for helping those who may be suffering, especially frontline health workers and the elderly. These treatments are not likely to be available soon, or at least not in time to be useful during the current pandemic. The clinical and methodical checkings, trials, and controls that are needed once these drugs are identified and screened will take time - according to estimates, up to 18 months for a vaccine process for a potential anti-COVID-19 (Omary et. al., 2020). Miserably, several incapable to get FDA approval, ethics committee approval, or governmental approval in time to catch the first wave of drug approvals. Additionally, countries lacked clear processes to prioritize larger pandemic trials, and many smaller trials hampered the progress of the global mega-trial.

COVID-19 causes an increase in stress levels in the population, which can negatively impact mental health, especially if mandatory home isolation is enforced. Psychosocial hazards arise from the uncertainty of the work situation today and in the future as well as from changes in processes and arrangements at work. It was the fact that most of the country was unprepared to face this kind of situation that caused the rise in casualties during the current pandemic. Yet, the world of researchers and scientists is unable to predict the current features of COVID-19. Most countries missed the peak of the first wave due to delays from national drug regulators, ethics committees, or health ministries. Additionally, countries

lacked clear processes for prioritising around larger pandemic trials, preventing the global mega-trial from moving forward. There are only a few countries that have dealt with pandemic situations like this and successfully saved people. The KSA is one of the country's leading the way in handling the pandemic situation successfully and returning life to normal. In this research article, Saudi Arabia is demonstrating the methodology and trying to stop the spreading of COVID-19.

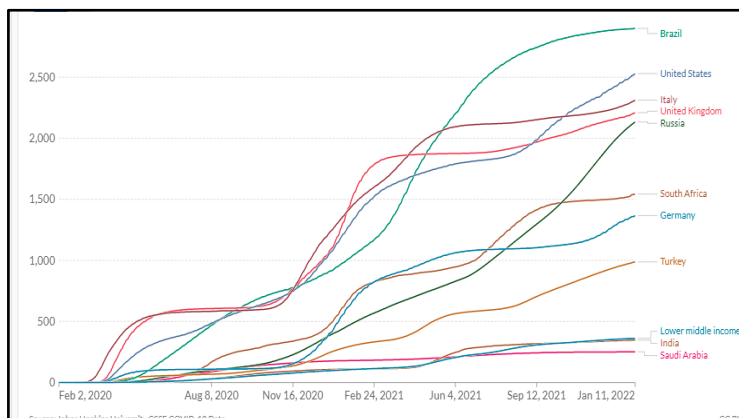


Figure 3: Death Rate Per Million as of 10/01/2022

Figure 3 shows the reason for choosing the significance of our research scenario. It is clearly indicated that the deceased population in Brazil is 2.9K per million, and in most developed countries, like US, UK, and Russia, Germany's death rate is more than 2K per million as of January 2022. Saudi Arabia's death rate is 0.25k per million populations. It is significantly notable data when compared with a developed nation and even 19 million populated countries like Chile, Ecuador and Peru with 33 million populations, whereas Saudi Arabia has a 35 million populations. As of 12/1/2022, the total number of deaths comparison chart in Figure 4 is shown.

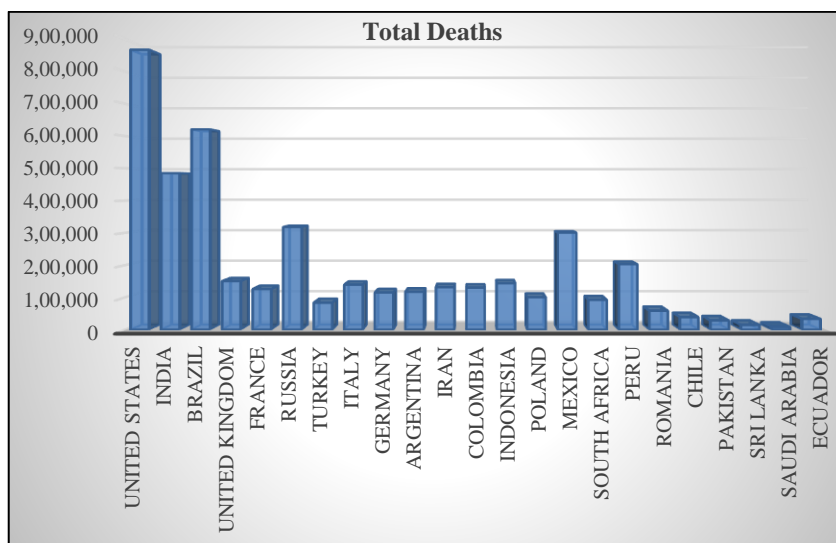


Figure 4: Total Number of Deaths

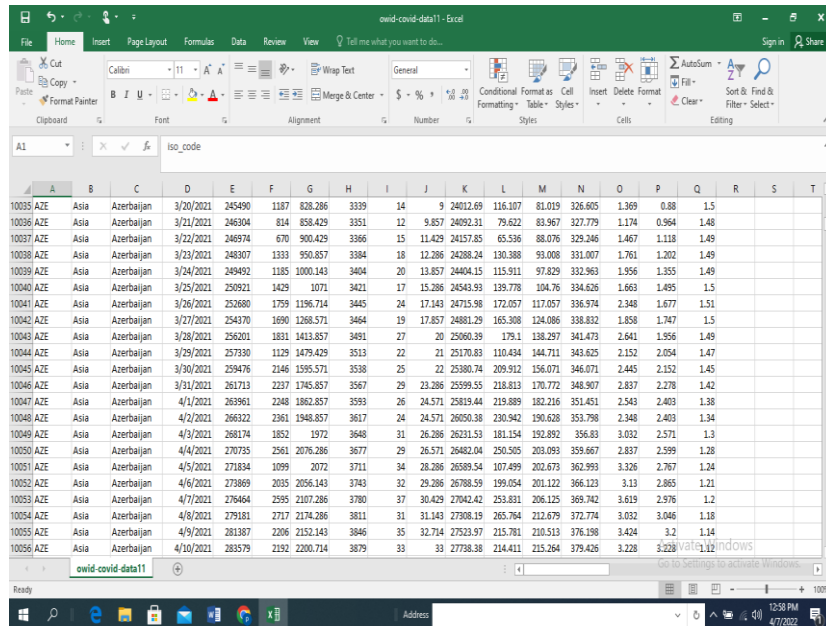
4 MATERIALS AND METHODS

This study reviewed clinical guidelines provided by the WHO for managing COVID-19 in a rapid manner. In our findings, clinical guidelines were defined as systematically developed recommendations made to direct patients with confirmed or suspected COVID-19. When establishing guidelines for research, they must focus on patient care. Worldwide, clinical guidelines will be increasingly in demand as the COVID-19 pandemic grows. Lessons can be drawn from both the current pandemic and future pandemics in this rapid review. COVID-19, an early pandemic clinical guideline produced by the international body, had many deficiencies. Saudi Arabia, like a few other countries constructed its own guidelines independently and all guidelines incorporated portions of the WHO interim guidance. It is essential to develop and include an infectious disease plan and process for mitigating, preparing for, responding to, and recovering from an epidemic or pandemic.

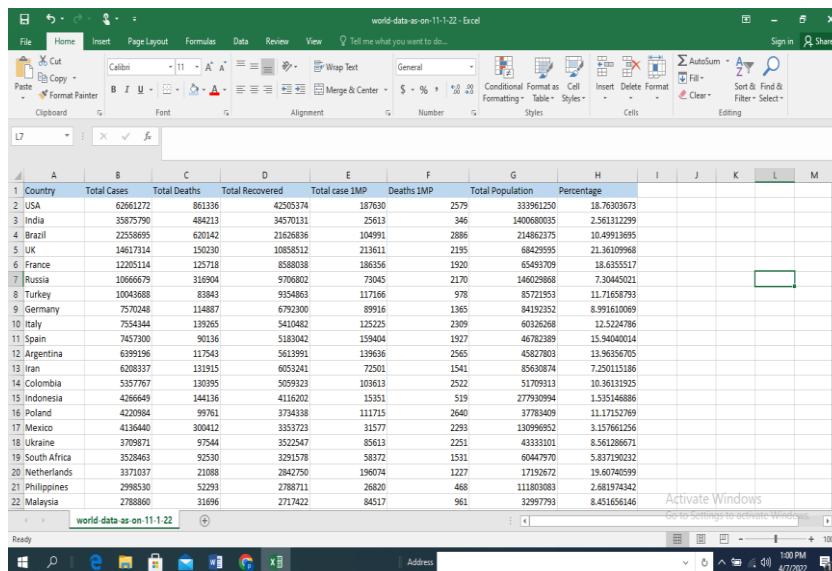
4.1 Data collection

Data from multiple sources on a wide range of human clinical data is needed when tracking the health situation, trends, progress, and performance of any pandemic situation. As part of WHO's support for member countries, it has responsible to data collection, managing data and, analyses, and use health data derived mainly from population-based sources and clinical-based experimental-related sources. To ensure the availability and quality of COVID-19 treatments, health

facilities and the supporting systems need to provide regular, reliable data. Medical and laboratory data help clinicians treat patients better, monitor disease progression, manage facilities, plan for the health sector, and monitor service coverage and quality. This data will be vital in evaluating the effect of COVID-19 on health workforce capacity and essential services, thereby improving the ability to respond to outbreaks in the future. In our study, we collected data and sources from a number of organisations related to COVID-19. We have explored the WHO-Global Health Observatory data source for completed and ongoing COVID-19 trials and data. As a part of our analysis, we also examined records from the European Centre for Disease Prevention and Control, including information on data on COVID-19 vaccination, daily numbers of new COVID-19 cases, and deaths related to COVID-19. Figure 5 provides detailed information about each data set.



Sources: <https://ourworldindata.org>
 Figure 5: Covid-19 complete data set



Sources: <https://ourworldindata.org/COVID-deaths>
 Figure 6: Dataset of Worldwide COVID-19 Deaths as of December 1, 2022

4.2 Preprocessing

The extracted data into a pre-piloted comma-separated-value file (csv) file which has mentioned in figure 5, consist of 153873 records (rows) and 68 metrics (column) total incidents of the above metrics as shown 10463364. The preprocessing of datasets related with the COVID-19 death comparison results is shown in figure 7. In Figure 6, 225 countries record with 6 attributes data set of COVID-19 death details were collected. From the study design, we identified the intervention type, methodological aspects, and participant characteristics.

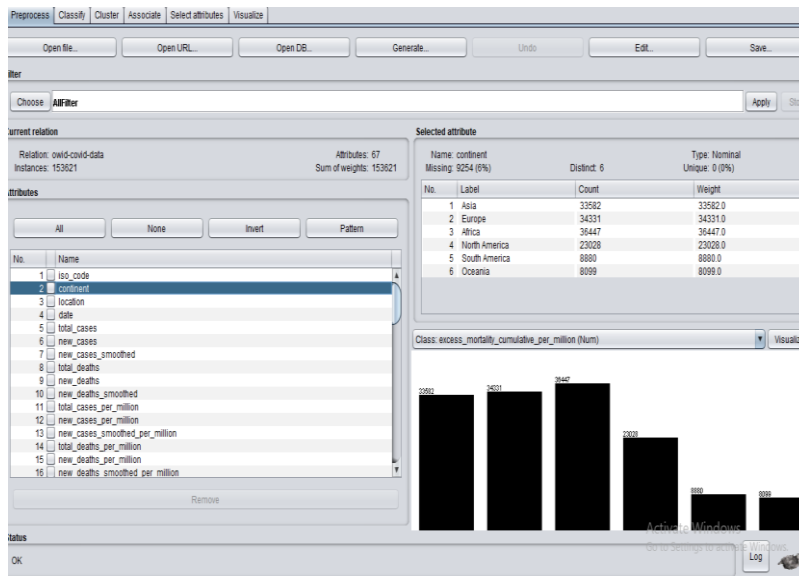


Figure 7: COVID-19 Deaths Preprocessing as of 12/1/2022

4.3 Analysis

We conducted statistical analyses using the Weka software (version 3.9.5). For data characterization, descriptive statistics were calculated. We performed a Random tree classifier with the attribute of excess mortality per thousand. There are 97182 nodes in the tree, and a model takes 0.55 seconds to build. The overall sum of cases 153621 and we have chosen 10 Cross-validation the output shown in Figure 8. The output result of the excess mortality rate of correlation coefficient 0.9144, Mean absolute error 232.5582, Root mean squared error result is 534.3663, Relative absolute error result is 23.7513%, Root relative squared error (RRSE) 40.852%.

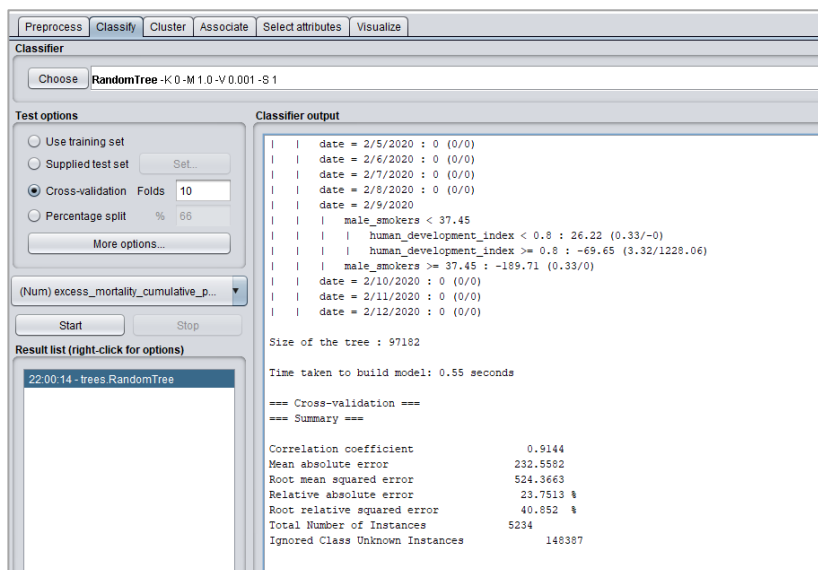


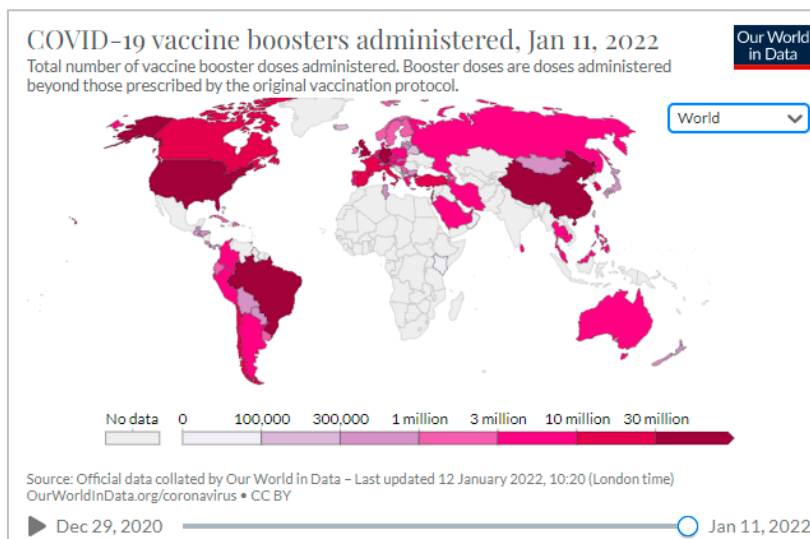
Figure 8: Excess Mortality Classifier Result

5 SAUDI ARABIA'S RETORT TO COVID-19

Saudi Arabia's Ministry of Health (MOH) has been making tremendous efforts to challenging by the novel Coronavirus, since cases were reported in (Wuhan), China. MOH praises the wise leadership for recognising the danger of this virus and the challenges it posed as soon as possible. All sectors of the Kingdom and all members of society, including citizens and residents, contributed to control the spread of novel virus syndrome. Some of the most prominent factors were the Ministry's early preparedness, speed of response, and transparency. Furthermore, the Kingdom's health system and medical equipment contributed to reducing the effects of the pandemic.

The number of COVID-19 cases in KSA is 815453 as of 21 September 2022, 3473 cases are still active, and 802735 are recovered. World data total affected cases are 618656182, active cases 13525451, and recovered 598595993. There are 17112 cases per million in Saudi Arabia and 41662 cases per million around the world, a difference of almost 1:2.5. The total mortality of the world is 6534738, it is 838 per million. Saudi Arabia's total number of deaths is 9335, it is 259 per million. When compared to other developed nations, the US death rate is 2611 per million, Brazil is 2889 per million, the UK is 2215 per million, and Russia is 2196 per million. Observing data from other countries, Saudi Arabia seemed to

have handled COVID-19 very well based on the death rate among them. Death rates are affected by several factors, such as the density of the population, which must also be taken into account. KSA has begun its response early, in two stages. The first, according to the Royal Decree issued on 26-01-2020 (6/1/1441 AH), ordered the establishment of the Supreme Committee which would handle taking all necessary precautions and measures to stop the novel diseases. Accordance with the Royal Decree on 25-02-2020 (7/6/1441 AH) the worldwide data was assessed and the reaction was accelerated to an advanced phase. As a result of the order, the Ministry of Health determined that all precautionary measures needed to prevent Coronavirus' spread should be taken, and a committee was formed. The committee was headed by the Health Ministry, and members included all participating agencies (MOH, Saudi Arabia, 2021).



Source: OurworldinData.org/coronavirus

Figure 9: COVID-19 Booster Vaccination as of 11/1/2022

5.1 Launching Mobile Application

The Saudi Data and Artificial Intelligence Authority developed the Tawakkalna App to support government efforts. The mobile App was created in cooperation with the Health Ministry and all relevant authorities to facilitate the electronic services that enable permission of movement of all sector people, during curfew periods. In order to minimize the social, economic, and health consequences associated with COVID-19 eradication, mobile applications assist individuals, security, health, and private entities exempt from curfew laws in automating transactions between relevant parties. Significant mobile app icons are mentioned in figure 10.

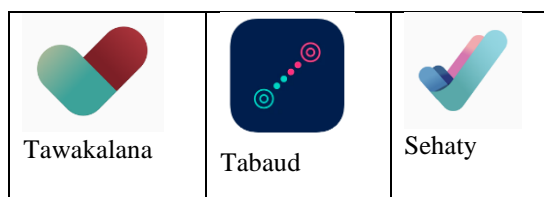
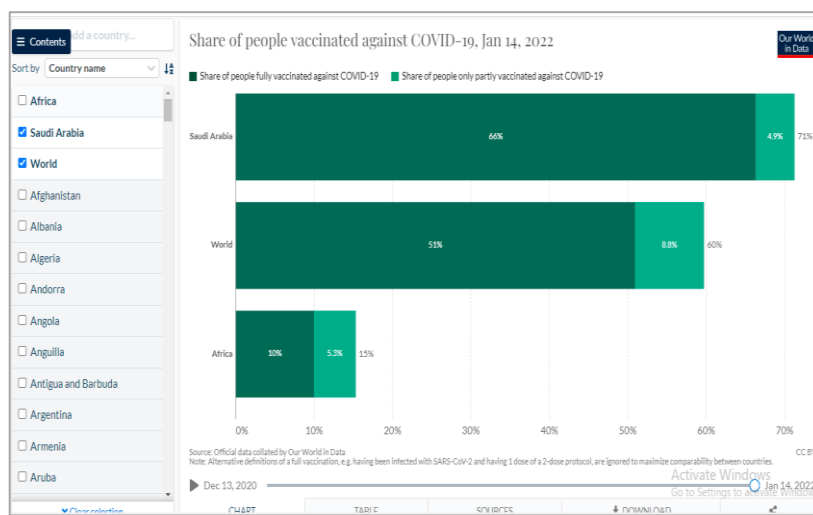


Figure 10: COVID-19 Saudi Mobile App

5.2 Saudi Arabia's Vaccination Programme

In mid-December of 2020, the KSA began implementing its vaccination campaign, just a few days after approving Pfizer/BioNTech's emergency vaccine for use throughout the kingdom. Pfizer BioNTech or Moderna (mRNA COVID-19 vaccine) is recommended by the CDC for those who are starting a vaccination program or getting a booster dose. Hundreds of immunization centres have been set up across the Kingdom. A comparison of vaccination details and metrics is shown in Figure 11, the overall contribution of the world is just 60% vaccinated, Saudi Arabia has more than 70% vaccinated. The Saudi Arabia administered very well vaccination and booster doses to their citizen and residents shown in figure 9.



Source: OurworldinData.org/coronavirus

Figure 11: COVID-19 Vaccination Comparison as of 14/1/2022

5.3 Travel Restriction and Guidelines

The KSA government forbids passengers from entering the country after April 2020 in respect of spreading of COVID-19. The airline crew is subject to quarantine for 2 weeks upon arrival if they passed through the passport control in a country with an ongoing Coronavirus (COVID-19) outbreak in the past 2 weeks. The Saudi government was not ready to take any risk on their citizen and resident life, so the Saudi government restricted all international flights. An online registration system has been implemented by the Saudi authorities to facilitate the repatriation of expatriates that hold exit/re-entry or final exit visas back to their home countries. In domestic travel, restrictions are imposed and 24-hour curfew and lockdown on entire governorates. As a result of the Coronavirus in order to safety of citizens and residents health, the competent health authorities have recommended stepping up precautionary and preventative measures.

5.4 Physical Distancing

The goal of physical distancing is to prevent COVID-19 from spreading by stopping a chain of transmission and prevent the spread of new outbreaks. It would be ideal to consider physical distancing such as limiting large or close contact gatherings and increasing the distance between employee work areas. In order to maintain efficiency and effectiveness, it is essential to test emergency communication plans and strategies periodically.

5.5 Gathering Restrictions

Saudi government imposed banned gatherings of people as a precaution against the spreading coronavirus. The number of family gatherings inside houses, rest houses, farms, and the like, is considerably higher than the number of individuals. The competent authority determines that they are not from the same household when they are not in compliance with the preventive measures against COVID-19. The government fined the people 1000 to 10000 riyals for breaking the rule and issued warnings to the people. The government-imposed restrictions on social events and gatherings, all cinemas, indoor entertainment centers as well as gyms and sports centers, other public spaces, are closed. In addition to this, dining services at restaurants and cafes are suspended and limited to take-out only, with no gatherings based on external requests.

5.6 Mobile App Health Monitoring

There are a number of ways in which mobile technology has been used to control the spread of COVID-19. It is very easy to access, adopt, and has the ability to support physical distancing efforts. As such, they have been widely developed and implemented during the past few months in an attempt to inform an increasing cases, providing knowledge and information to citizens and residents.

- ❖ Sehaty
- ❖ Tawakkalana App
- ❖ Tabaud App
- ❖ Mawid App
- ❖ Tataman

During critical pandemic times, the following mobile application provides enhanced COVID-19 services. Users of the Sehaty App in Saudi Arabia can access health services. A second feature of the Tawakkalna app is that users can see their health status through coloured codes while maintaining the highest levels of safety and privacy. Three, there is the Tabaud app, which is used to track Coronavirus infections. The Seha app provides online medical consultations. Through this app, users can receive complete medical advice. The Mawid App facilitates patients' appointments at primary care centres in coordination with the appropriate department. The Tataman app is one of MOH's apps that provides protection and health care to local citizens and residents who are in quarantine in order to maintain their safety and enhance their recovery.

5.7 Working Flexibilities

During the pandemic, the KSA government implemented flexible working hours. Staff members are encouraged to stay home when sick, or if they must take care of an ill relatives. Because of pandemic, work hours and days were adjusted, often to balance work with other responsibilities. The use of remote or home-based work is only one form of flexible working. Flexibility in work arrangements improves recruitment and retention efforts, enhances organizational diversity efforts, encourages ethical behaviour, and makes an organisation more socially responsible. Maintenance costs are reduced, attendance is improved, and productivity is increased through flexible work.

5.8 Digital Facility

The government and private sectors of Saudi Arabia have developed and launched approximately 19 applications and platforms that serve public health functions and provide health care services. The application services listed in Table 1 are described in more detail below. Several user-friendly COVID-19 mobile applications have been launched by the Saudi government for accessing the health application server 24/7 and avoiding server overload. The Ministry uses social media, websites, and SMS texts for risk communication.

Table 1: COVID-19 Digital Facility

Application	Facilities
Sehhaty	Teleconsultation
Mawid	Symptom checker/appointment MOH
Anat	E-prescription gateway
Wasfaty	The official e-prescription MOH
Asefni	GPS-enabled requests for emergency services nationwide.
Cura	Teleconsultations
Maya Clinic	Teleconsultations.
Nala	Teleconsultations
Labayh	Teleconsultations
80/20 Lifestyle	Remote patient engagement
Virtual Medical Academy	Videoconferencing health care professionals.
SCFHS Webinars	Support services to health care professionals (Hassounah et. al., 2020).

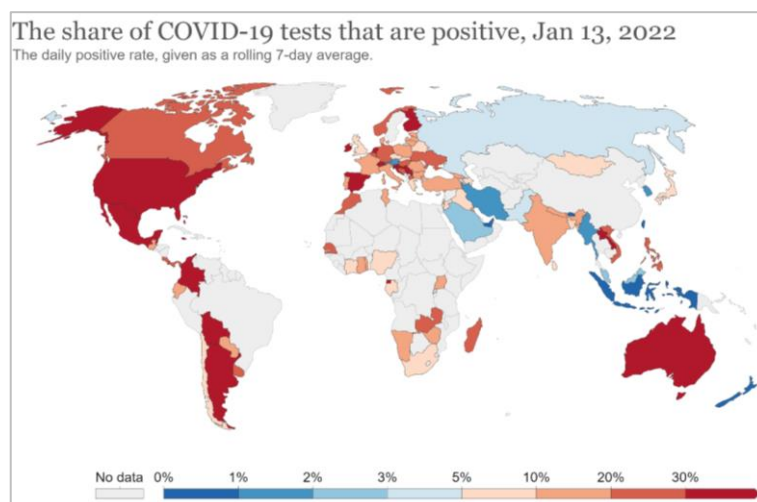
From March 2020 to October 2020, the 937 Health Center hotline received over ten million calls related to the COVID-19 pandemic, videos are distributed through social media channels, and 7500 health care trainee sessions are held to create awareness. More than 5 billion multilingual SMS messages inform residents and citizens about how to prevent infection. 19 million e-forms are handled by the Ministry.

5.9 CDC Support

People with COVID-19 and the other variant should isolate for five days if they are not symptomatic. They should be kept for at least three days for those who are symptomatic. Saudi (CDC) Centre for Disease Control and Prevention issued many guidelines related to COVID-19 precautions. CDC announced guidelines and precautionary measures during pandemic to the following sectors Public Sector, Transit Bus, Master Cruise, Mosque, Stores and Malls, Administrative and Office Business, Home Delivery Services, Domestic Labor, Factories, Domestic and International Aviation, Rented Vehicle, Inter-City Bus, Taxi and Shared Transportation, Farm, Men's Barber Shop, Cinema, Indoor Entertainment Wedding, Events and Chalets, Educational Institutes, Funeral Services, Entertainment Areas, Umrah and Visiting Period. It has been strictly monitored by special local municipal authorities.

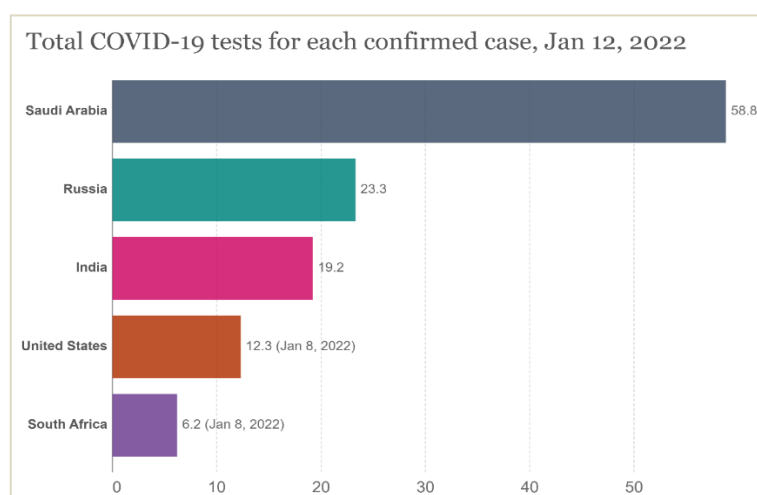
5.10 Availability of COVID-19 Testing

Saudi Arabia has established Tetamman Clinics to treat people who show symptoms of COVID-19 in an effort to prevent its spread. A Saudi Health Ministry training programme should be designed for all employees handling SARS-CoV-2 samples, such as collection, packaging, transportation, analysis, and specimen storage. The Saudi Arabian CDC ensures that the laboratory has all the required standard operating procedures (SOP), as well as that the laboratory staff is trained in all relevant procedures. RTPCR testing for COVID-19 should be conducted using a confirmatory test approved by the Public Health Laboratory. Figure 12 shows worldwide COVID-19 positive cases by percentage and Figure 13 shows the comparison chart of the COVID-19 test conducted by Saudi Arabia and other countries. KSA has conducted more tests than other countries.



Source: OurworldinData.org/coronavirus

Figure 12: COVID-19 Positive Cases in Percentage as of 13/1/2022



Source: OurworldinData.org/coronavirus

Figure 13: Total COVID-19 Test os of 12/1/2022

5.11 Isolation Guidelines

Maintaining hygiene, using personal protective equipment (PPE) to avoid direct contact with blood, body fluids, and secretions of patients. Work with a medical mask within one metre of a patient. Patients should be placed in isolated rooms or grouped together if they have the same aetiological diagnosis. Guidelines for healthcare providers on how to care for COVID-19 patients are included in the MOH-approved scientific instruction manuals. The guidelines are updated regularly. There are more than 40 guidelines from MOH Saudi Arabia regarding the care of patients with COVID-19.

5.12 Federal contribution

Generally, Federal Monitors mask protection and keeping social distancing including increasing the space between employee work areas and decreasing the possibility of contact by limiting large or close contact gatherings should be considered. The emergency communication strategies periodically tested to ensure the use of procedures. As of 15/1/2022, the Saudi security authorities identified 4159 violations within 24 hours. Masks were not worn and physical distancing was not maintained, which were the main violations. Health protocols have been updated for commercial centres, markets, malls, restaurants, and cafes by the Public Health Authority (Weqaya) (Saudi Gazette, 2022).

6 SUGGESTIONS

There is no doubt that COVID-19 has reached a new stage with a rapid spread in all countries. All members of society must be aware of and practice self-protection, prevention of transmission of a new virus, and to avoid more mortality. To start, countries should rapidly and robustly enhance their readiness, preparedness, and response actions based on the WHO transmission scenarios. It is recommended that countries with a high mortality rate or those with more likely communal transmissions consider a combination of response measures, such as case and contact finding, containment, or other measures. It is important for countries like Brazil and African nations to take precautionary measures and promote personal protective hygiene, prepare health systems for a surge of seriously ill patients, strengthen infection prevention and control in health facilities, nursing homes, and long-term care facilities, and postpone or cancel large-scale public gatherings.

At a national level, the Saudi Ministry of Health has been working on planning, coordination, and monitoring. The organisation has maintained effective communication during the pandemic and ensured community involvement, epidemiological surveillance, and the deployment of rapid response teams. A number of port and transportation monitoring activities were conducted, as well as operating laboratories to their full potential, including those operated by the National Center for Disease Prevention and Control and regional laboratories within each region. Additionally, it has supported infection prevention and control teams as well as case management and treatment. In addition, MOH has provided operational and logistical support, ensuring the continuation of basic health services.

7 CONCLUSION

Pandemic and infectious disease planning is essential to health, safety, and economic continuity. As with any incident, proper planning is the basic to a successful response. Resiliency is an important aspect of any operation and maintaining a pandemic or infectious disease plan provides the processes necessary for any countries to save the people's lives. More COVID-19 patients and more deaths in European and African countries are due to the fact they did not anticipate or are not prepared to deal with a pandemic situation. There are political, ethical, administrative, contractual, regulatory, logistic, economic, and societal factors that may cause more number of casualties, though these difficulties should be overcome in times of pandemic crisis. In spite of the unpredictable characteristics of new outbreaks, most countries are not ready to respond to or follow the WHO COVID-19 guidelines with strict measures. This article is meant to guide the highly COVID-19 affected countries along a recommended process of developing a comprehensive pandemic plan which has been properly implemented by the KSA. Another significant reason for more casualties not occurring in Saudi Arabia is the successfully implemented COVID-19 vaccine free of charge, to all citizens and residents. This type of pandemic planning is essential for the world to prepare for any other future pandemic situation. The findings of our study indicate that the Saudi government has taken strict precautionary measures in regard to COVID-19 in order to protect its citizens and residents.

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