



Review Article

Impact of Corona Virus on the Health Care Services in Saudi Arabia

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Abstract

Introduction: Several studies have been examining the connection between coronavirus and the healthcare services of a country. Saudi Arabia is one of the nations, which faced the severe impact of the medical condition during peak period. Specifically, there were effects on the healthcare service delivery of chronic diseases because of the shift in attention to the pandemic. This study aims at establishing the effect of coronavirus on the follow-up, control, screening, vaccination and quaternary preventions indicators of quality healthcare. **Methods:** The survey was planned for 300 participants but will use only 220 respondents because of various reasons. Besides, the purposive approach is the method of determining the participants of this study. On the other hand, the quantitative research will use an online questionnaire to collect data. The analysis of data will be a descriptive evaluation using Chi-square tests. **Results:** The majority of these respondents (56.9%, n=125) have stated that the quality of healthcare services reduced drastically during the COVID-19 pandemic. Close to 73.2% (n=171) have agreed that follow-up of chronic diseases reduced. Only 34% of the participants insisted insist that control of chronic conditions did not improve during the pandemic, 74.5% (n=164) of the participants have argued that screening reduced when they visited health facilities. Further, 85.5% (n=188) of the respondents noted that the level of vaccination reduced during the pandemic. And, that as much as 83.6% (n=184) participants have experienced a high level of worry during the COVID-19 pandemic. **Conclusion:** The findings of the study show that COVID-19 had impacts on all quality healthcare indicators. These impacts varied depending on the effect on patients. There will be a need for future studies to establish the implications of coronavirus on healthcare services.

Keywords: COVID19; Impact; Health services

Introduction

The world has had several pandemics in its history, which ravaged its population. Despite the assumption that the globe is prepared for disasters, the COVID-19 pandemic has proven otherwise. The deadly disease began in Wuhan, China, in December 2019, but World Health Organization (WHO) announced it was a pandemic in March 2020. The fast spread of the disease resulted in 72 million individuals and over 1.61 million deaths reported globally. The Kingdom of Saudi Arabia is one of the nations that have been greatly affected by the pandemic. According to

WHO, the country has reported 546,735 cases and 8,679 deaths as of 22 September 2021 [1]. Further, the health organization said that the government had administered 41,325,560 vaccine doses, meaning a significant percentage of citizens have been vaccinated. Currently, the number of infections in the nation is low because of the combinations of vaccines and other government measures to curb its spread. However, Saudi healthcare services experienced shocks during the peak of infections in the nations. The country experienced a surge in the demands of pharmaceuticals and Personal Protective Equipment (PPEs) (surgical masks, face shields, medical gowns). Besides, there were massive demands for N95 respirators, hand sanitizers, and gloves. The need for medicines such as Tocilizumab, hydroxychloroquine, lopinavir/

ritonavir and ribavirin, and dexamethasone were huge during the peak period of the corona pandemic. The above were critical in handling COVID-19 patients in public and private hospitals. The majority of studies have focused on the impact of changes in the demand for equipment and healthcare workers to healthcare services of Saudi Arabia. Conversely, few studies have examined the effects of COVID-19 on the healthcare services delivered in the country. This research will investigate the impact of COVID-19 on other healthcare services indicators of patients in primary care.

Healthcare Indicators

Healthcare indicators cover follow-up, control, screening, vaccination and quaternary preventions extended to patients visiting hospitals and clinics. A significant number of global healthcare standards identify the above healthcare indicators as vital determinants of quality healthcare services extended to patients. For instance, the Estándar de Qualitat Assistencial (EQA) calculates the handling of chronic ailments in primary care using these indicators in Catalonia [2]. Similarly, health standards in Saudi Arabia provide guidelines for handling chronic illnesses like diabetes, cardiovascular diseases and other terminal diseases using the above indicators. Typically, patients with chronic diseases demand utmost care to prevent their diseases from overwhelming the immune system. However, during the COVID-19 pandemic, much care shifted to the control and addressing of coronavirus patients (Smith). Accordingly, other chronic disease patients experienced changes in primary care because of a shift in attention to the pandemic. Since the disease impacted global healthcare systems, it will be prudent to conduct an in-depth analysis of the effect of COVID-19 on healthcare services in Saudi Arabia will be necessary.

The Objective of the Study

The primary objective of this study is to examine the impact of COVID-19 on quality healthcare provisions to Saudi patients with chronic and other ailments during the pandemic.

Other aims of the research include:

1. To evaluate the primary healthcare indicators in Saudi Arabia
2. To investigate the effects of coronavirus on healthcare delivery of simple ailments facing Saudi Arabia
3. To explore the preparedness of Saudi Arabia to handle pandemics and typical diseases affecting its population

Relevance and Scope

The primary purpose of this study is to evaluate the effects of COVID-19 on healthcare services in Saudi Arabia, with a primary concentration on healthcare indicators. This study is relevant as it involves the entire Saudi healthcare service delivery system when experiencing stress. With the surge in COVID-19 cases in 2020,

Saudi Arabia faced the healthcare supply of machines, medicines and equipment. Despite massive steps in ensuring the flawless flow of products from suppliers to its hospitals, the nation did not match the efficiency during the pandemic. The problem was further heightened because of the global demand for the products.

Additionally, much of the efforts were directed towards preventing the gulf nations from scenes experienced in Italy, Spain, the US and the UK. These nations showed complacency when dealing with early warnings about the impact of the diseases. As a result, their healthcare systems became disoriented and, in the process failing to address other illnesses considered as a national threat. A look at the effect of COVID-19 on the attainment of crucial healthcare indicators that involves chronic and other ailments would assist in summing up the results of the pandemic. The paper will concentrate on the five indicators (follow-up of chronic diseases, control of chronic diseases, screening, vaccinations and quaternary prevention when evaluating how Saudi Arabia dealt with other ailments with the rise in coronavirus cases. The findings of this research will be helpful to the government, medical providers and officials and scholarly purposes.

Literature Review

The literature review segment will utilize previous studies to examine the effects of COVID-19 on healthcare service delivery in the nation. The primary areas covered by these sources will include the coronavirus pandemic, theoretical framework of quality healthcare service provision, clinical practice guidelines indicators and the impact of COVID-19 on the attainment of these indicators in the cases of chronic diseases.

Coronavirus Pandemic

COVID-19 is a highly contagious respiratory ailment, which continues to affect the world owing to its mutations. According to the WHO, the world needs to combat this ailment as it is the single most hindrance to normal human activities. Aljadeed, et al., in their study on the impact of the disease on the supply chain in Saudi Arabia, found out that the number of reported cases at the end of the year 2020 was 72 million [3]. The number of deaths was also high as it stood at 1.61 million deaths. Although WHO officially reports the above figures, the numbers could be significant since nations such as North Korea, Russia, China and Tanzania have been economical with accurate infections and deaths [4]. The massive population of infected persons means that healthcare facilities are overstretched to meet the medical services sought by these patients. Despite the modern and significant number of healthcare facilities in Saudi Arabia and other self-sufficient nations, it was clear that the considerable number of admissions would stretch medical facilities. Accordingly, there was the risk of patients with chronic diseases failing to get the necessary attention to manage their conditions because of the shift in awareness of

the pandemic. Although several studies have covered the impact of COVID-19 on mental health care, other chronic diseases also faced similar risks because of overwhelming numbers of patients with respiratory disease visiting hospitals.

Theoretical Framework of Quality Healthcare Service Provision

5-E Model

Quality healthcare is a human right, and people are constantly becoming aware of its importance in their lives. Researchers and healthcare organizations are also increasingly coming up with new models that depict quality healthcare service. One best example is the Five E's model proposed by Mosadeghrad. (Appendix image 1) [5].

The quality healthcare framework is classified into two categories (intangible and tangible units). Tangible attributes focus on the first E (environment), which captures physical facilities and personnel responsible for providing healthcare services. On the other hand, the intangible characteristics of healthcare organizations cover the remaining Es (Empathy, Efficiency, Effectiveness and Efficacy). According to Mosadeghrad, empathy is the ability to understand the needs of diverse patients and deliver primary care services. A medical provider with empathy has attributes such as effective listening, trust, respect and confidentiality. Efficiency deals with the extent of proper utilization of resources to achieve quality healthcare outcomes. The model insists that wastefulness increases the risks of poor service delivery. Conversely, Effectiveness is a short-term clinical and non-clinical development attained when a patient is offered services in a health organization. Effectiveness includes proper diagnosis and provision of care to a patient.

On the contrary, efficacy is the long-term outcome attained because of providing quality healthcare to the patient. Patients in Saudi Arabia could achieve quality healthcare services when the above attributes are achieved when they visit healthcare facilities. The Five Es is a simple quality healthcare model that features crucial elements in most clinical models on the matter [5]. The downfall of the model is that only medical providers can understand its mechanism, with patients being left in the dark [6]. However, some clinical indicators are helpful to both medical providers when addressing the provision of quality healthcare in a clinical setting. At the same time the 5 E model is somewhat similar in reach to the 5-P model in HealthCare.

5-P Model in Healthcare

The rapid pace of life and modern scientific discoveries pose complex challenges for medicine. Treatment of patients with standardized methods based on template programs is losing its relevance today. The newest medicine of the future comes to the fore, standing on five pillars that form its main ideology. Because

of this, it received the name "5 P - Medicine" [7].

The new 5 P - medicine is based, first of all, on a deep individualized approach to the patient and the desire to prevent diseases, without bringing them to the necessity of treating them. This approach can significantly improve the quality and efficiency of medical care. This concept is being discussed today not only in scientific circles, but also received confirmation at the state level. The introduction of personalized medicine was identified as the nearest strategic goal in medicine for 2015-2030 [7].

Socio-economic benefits

The 5 P-medicine concept also has advantages from a socio - economic point of view. For the state, these are the following benefits: lower costs for combating diseases, fewer disabilities, and prolongation of citizens' labor activity [7]. Benefits for people include increased life expectancy, reduced disability risks, improved quality of life, reduced drug costs. Taken together, we can conclude about the merits of the concept from all positions. Until recently, it was about the development of 4 P-medicine, which was based on the following characteristics [7].

Predictive medicine

Thanks to large-scale discoveries in the field of genetics and the decoding of the human genome, today medicine has a mechanism for analyzing human DNA. The genes contain secret information about the patient's health, which reveals to the doctor a full picture of the risks, predispositions and "weak points" of the body. Thus, it becomes possible to "predict" pathologies and diseases that are likely to occur in the patient in the future [7].

Preventive medicine

On the basis of the development of genetics, a new science was formed - epigenetics. Its essence lies in the ability to correct the work of human genes by way of life, nutrition and prevention. This means that, having revealed the secrets of the patient's body through the means of the previous mechanism, the doctor focuses his efforts on the prevention of probable diseases and pathologies of the patient instead of the traditional treatment of existing diseases. This allows to maintain the patient's health for many years and postpone the aging process of cells.

Participatory medicine (the patient is an active participant in the process, he is taught and helped). It has long been no secret for physicians that nutrition and lifestyle have a very large impact on human health. Therefore, in order to actually set the mechanism of 5 P-medicine into action and practice successful prevention, the doctor must convey to the patient his important role in maintaining his own health [7].

Full and effective prevention is a huge work that the patient himself must do on a daily basis on the basis of the doctor's recommendations. Therefore, he must understand his risks and

weaknesses and clearly know the mechanism of action to minimize the chances of developing pathologies. And this is not limited to the advice that our patients are used to: “take the pill after meals.”

Personalized medicine

All people have a unique DNA, and therefore a personal set of predispositions and risks. Based on these data, it becomes obvious that treating everyone according to the same scheme is ineffective. Thus, the medicine of the future is based on the selection of individual procedures, programs, drugs and doses of medicines that will be effective for a particular patient [7].

In 2015, an initiative was made to join another type - Positive Medicine. The patient's attitude has a very large impact on the positive effect of treatment and prevention. Everyone is familiar with the “placebo” effect, when people were cured of serious diseases by taking ascorbic acid under the guise of a powerful medicine. Conversely, the nocebo effect, when highly effective drugs did not help the skeptic patient. Negative thoughts lead to the production of cholecystokinin, as well as the stress hormones cortisol and adrenaline. Therefore, in order to achieve a good result, it is very important to instill in the patient a positive attitude regarding the developed prevention and treatment program.

Thus, in the aggregate, these five areas today form the 5 P-medicine of the future, which we strive to develop by means of introducing genetic analyzes into the ubiquitous practice of doctors [7].

Although it is necessary to focus the PM on the potential of an interdisciplinary scientific paradigm of both biomedical and psychological, social, economic knowledge and practical medicine. Among the four basic principles of PM is the principle of participation, understood as the “assembly” of all subjects of the treatment process, cooperation between doctors and patients, as well as an active, subjective, motivated role of the patient in the prevention, treatment and rehabilitation of diseases.

Clinical Indicators of Quality Healthcare

The primary clinical indicators of quality healthcare include follow-up of chronic diseases, control of chronic diseases, screening, vaccinations and quaternary prevention. Coma et al. noted that the healthcare quality standard incorporates the above five indicators as an evaluation of the performances of the medical system during the COVID-19 pandemic [2]. The follow-up of chronic diseases is typical in an established medical system like Saudi Arabia, where the government is keen on addressing chronic diseases affecting its population [8,9]. These diseases are contributors to mortality rates in the nation. Next, control of these chronic diseases is necessary, especially in the scenarios where they become a national disaster. For instance, the Gulf nation has been experiencing a surge in the cases of childhood obesity, which demands total control to prevent it from worsening [10,11]. Besides, screening seeks to establish the

presence of risk of contracting certain diseases. Saudi Arabia has been engaging in screening ailments such as cancer of the breast and other vital organs to facilitate earlier treatment [12-15]. Quality care is attained through administering a vaccine for a medical condition that could be prevented through the intervention. Lastly, quaternary prevention intends to deal with actions taken to identify patient risks of poor prescription and suggest ethically accepted interventions. However, nations registered poor indicators during the COVID-19 pandemic.

The Impact of COVID-19 on the Attainment of these Indicators

During the COVID-19 pandemic, there were reductions in follow-up, control screening and vaccination indicators. Coma, et al. found out that in Catalonia, there was a reduction in the control of indicators such as “HbA1c control in type 2 diabetes mellitus, blood pressure control in hypertensives or LDL control in Ischemic Heart Disease (IHD) and Cerebrovascular Accident (CVA) patients; in screening indicators such as diabetic foot screening or diabetic retinopathy screening; and even in vaccination indicators such as MMR vaccination in adults.” Despite the reduction being negligible, it was significant in the study of the effect of COVID-19 on quality healthcare provision. Treatment indicators also showed that patients were willing to pick any available medication, especially during the onset of the medical condition, to minimize risks presented by individual ailments. Furthermore, quaternary preventions were also limited during the start of the virus as there were no keen screenings to prevent wrong administering of prescribed drugs.

The Future of Medicine after COVID Pandemic

Innovations

Breakthrough and Telemedicine: Will the coronavirus pandemic lead to a breakthrough in healthcare? Yes, definitely. The medical community has redefined its attitude to new technologies. The most obvious breakthrough has come in the pharmaceutical industry. During the current pandemic, developed countries are at the forefront of vaccine developers. However, a sharp acceleration of innovation processes is now taking place in many other areas of health care. Most importantly, what is happening now: the pandemic has forced the medical community to reconsider its attitude to modern technology. Prior to that, doctors were very conservative when it came to the use of new technology, especially when it came to remote diagnostics, telemedicine, and remote control of equipment. And now it's just a vital necessity.

Diagnostics, equipment control, training: all is accomplished remotely. Many countries have now begun to actively purchase equipment that allows remotely using a tablet to do tomography of the lungs. Another example: servicing medical equipment operating in hospital red zones with covid patients. Service engineers can

now, working remotely, monitor equipment 24 hours a day and, if necessary, adjust it without direct contact with an infected patient.

The pandemic has given a powerful impetus to the remote training of medical personnel. The healthcare industry has long attempted to introduce a culture of virtual learning among, for example, radiologists and radiologists. But many people were not ready for this. Knowledge transfer is now happening much faster.

These observations coincide with the conclusions reached in Germany by the Spectaris industry union, which unites manufacturers of medical, ophthalmic and laboratory equipment. Together with consulting company Roland Berger, he decided to find out what impact the SARS-CoV-2 virus would have on the industry. After conducting a survey among representatives of about 500 enterprises and interviews with experts, he published a study at the end of 2020, the main thesis of which is: a pandemic is leading to irreversible changes. In other words: the coronavirus has accelerated the arrival of the medicine of the future.

Digitization, which has only hesitantly paved its way in years past, is now rapidly accelerating. This is confirmed, for example, by the growing willingness to use telemedicine and digital concepts in outpatient care, as well as the accelerating digitalization of processes in medical technology and in hospitals, ' claimed Thilo Kaltenbach, co-author of the study and senior partner at Roland Berger.

Thus, telemedicine is considered one of the key trends by 76% of the industry representatives who participated in the study. It mentions, in particular, a survey of German patients, among whom, before the pandemic, only one in five was ready to receive medical consultations in video mode, and already in July 2020, after the first quarantine, one in three showed such readiness. The mood swings were mainly caused by fears of getting infected during an in-person appointment with a doctor. German doctors quickly responded to this trend. If in 2017, according to the SWR TV and Radio Company, less than 2% of private medical practices in Germany offered telemedicine services, then by the end of 2020 there were already about 50% of them, and another 10% were preparing to master this format of communicating with patients.

Vaccine innovation: development, production, regulation

As for pharmaceuticals, namely the development and production of vaccines, innovations went in three directions at once, and everywhere - at a record pace. Until recently, the timing of the introduction of innovations in pharmaceuticals was radically different. The main thing, of course, was the development of vaccines themselves, but mass vaccination of the population would have been simply impossible without innovations in two other areas. This is perhaps the first time the industry is faced with the need to scale production so quickly. The challenge was to release billions of vaccine doses in the near future, and from

a production point of view, this has become a huge challenge for vaccine creators, equipment manufacturers, and suppliers of auxiliary materials. Without innovative approaches, this task would not have been possible to solve.

The third area we can name is innovations in regulation. Given the scale and speed of the pandemic, regulators have also had to find innovative ways to evaluate the results of preclinical and clinical trials, as well as when approving drugs. It took new approaches to the balance of risk and benefit in order to respond with the required speed.

The visible result of all these innovations was the creation of not only vaccines against coronavirus, but also the capacity for their production. To do this, it was necessary to modernize equipment and production processes, as well as to improve the qualifications of personnel. This caused an innovative breakthrough in all pharmaceuticals, because those who went into a breakthrough pulled others along with them.

At the beginning of February, DW wrote in detail about the scale of the innovative breakthrough that is now taking place in German pharmaceuticals in the article "The pharmaceutical industry of Germany will fight the shortage of vaccines from covid around the world." The fact that, in a pandemic, eminent companies from different countries are urgently involved in the production of vaccines against coronavirus, even if these are the developments of their direct competitors, can perhaps also be attributed to bright innovations. And, perhaps, to the signs of the global medicine of the future.

Medical Management

The coronavirus pandemic, which began at the end of 2019 in China and then swept the whole world, challenged the usual approaches to personnel management in all organizations, but especially in medical ones. Everyone faced difficulties in carrying out their daily duties, from employees in administrative positions to those who directly provide the process of treating patients, that is, doctors, nurses, orderlies, ambulance drivers, etc. As the experience of medical organizations has shown who managed to most effectively reorganize the work of their employees over the past year, and the first and second categories of those employed in emergency situations need specific management decisions.

Those involved in the treatment of patients needed to be provided with the earliest and most complete familiarity with the protocols for the provision of medical care for patients with COVID-19. Many of the people who ran covid hospitals and treated these outpatients were not infectious disease doctors and worked with other types of patients prior to the outbreak. They needed to readjust to a new reality in which everyone who was admitted to the hospital and who came to see them was a potential source of infection.

Experience has shown that in such a situation it is very important to give a person the opportunity to try himself in new conditions, without putting himself and others at risk. To this end, an on-site simulation center has been opened in many countries, where doctors can train their skills in a number of situations that are most common during an epidemic. These are, for example, intubation, including intubation with complications, the introduction and maintenance of anesthesia, the cessation of oxygen supply, the breakdown of mechanical ventilation, and all this in personal protective equipment. The simulators of the International Medical Cluster act as patients in the simulation center - these are robots that repeat the real musculoskeletal structure and human physiology, as well as human reactions to various manipulations.

Working effectively in a stressful situation depends not only on having skills, but also on being able to deal with stress. Therefore, during the epidemic, psychological support lines for doctors, nurses and other employees of hospitals and clinics were in great demand.

The situation of uncertainty, the need to adapt to new conditions contribute to the development of stressful conditions in all categories of employees, including those who, it would seem, are safe - at a distance. So, according to the research, about 30% of employees working remotely experience stress, another 10% - severe stress. This is a serious indicator that affects the working capacity of the team and its stability, but many companies underestimate its impact. When moving to remote work, it was important not to leave employees alone with their fears and worries about the future.

While the ability to work outside the office has many benefits, it can also make employees feel lost, lonely and ultimately demotivating them to do their jobs well. During the pandemic, the responsibilities of even these workers expanded and their involvement was critical.

During the pandemic, traditional ways of rewarding workers faded into the background, new tools began to work. For all employees, regardless of their line of business, engaging in an important and big goal (in the case of COVID-19, saving lives) has a positive effect on the organization's activities. A goal like this helps professionals cope with high levels of uncertainty and feel the importance of their work.

Motivation of doctors plays an equally important role in successfully overcoming difficulties and preventing burnout. In my opinion, the obvious - material - motivation in critical cases is significantly inferior in strength to a sense of professional duty, the desire to be at the forefront and see that patients are getting better thanks to your work. In the United States, for example, in a number of hospitals, in order to maintain a militant mood among

workers, in those cases when a serious patient, some time after being connected to a ventilator, began to breathe on his own, bells rang through the hospital's intercom. Understanding the importance of your work, the feeling that all efforts are not in vain, the recognition of merit by others is very inspiring and gives strength to move on, despite the difficulties.

The difficulties of the team become the difficulties of leadership: in addition to worry for themselves and those close to them, management also shows concern for the future of the team and the organization. To support the team, to reduce the level of anxiety, it is necessary to build regular communication, talk openly about all the changes and innovations. This is also confirmed by the numbers: 51% of survey participants noted that regularly informing about the situation in the company and any changes helps to deal with stress, and 39% of employees of various companies noted that the leader can best support him by talking about the situation in the company. McKinsey encourages leaders to balance communication between realism about the challenges ahead and confidence that the organization will emerge from the crisis.

In addition, the organization's management needs to accept the fact that during a crisis it is impossible to obtain all the necessary data to make a decision. The principle of call-pause-evaluate-expect-action should be followed. When faced with a problem, the leader must evaluate it and, without greatly delaying decision-making, act. This will avoid panic due to a situation where many unresolved issues accumulate.

Another recommendation: Leaders should loosen the emphasis on rigid hierarchy and control, put the team and its unification first, and focus on changing people's lives for the better by demonstrating awareness, willingness to support and empathy.

In case of uncertainty, it is necessary to adapt to changing circumstances, try to take maximum benefit from the current difficult situation, temporarily setting aside the formulated long-term plans and usual KPIs. It is important that these qualities are valuable not only during a pandemic - our world is changing very quickly, and teams with a wide horizon, the ability to quickly find new solutions to difficult situations will always be in demand. A pandemic, on the other hand, makes it possible to evaluate your colleagues in a situation in which both strengths and development zones are most clearly manifested-stress.

The pandemic has pitted two worlds of people - work and home, and finding a balance between them at a distance has become a non-trivial task. Each employee independently searched for a convenient format of work, and the function of the manager was to combine different life and work situations of employees to achieve maximum results and rigid templates, schedules and plans were not always the best way out, and flexible approaches made it

possible to achieve the set goals.

It is equally important to support workers who get used to the different rhythms and distractions of telecommuting. Also, digital assistants based on artificial intelligence can get a separate stage of development, which will provide additional organizational support without putting anyone at risk of infection. They will be able to coordinate the work of management, allowing them not to waste time on simple routine tasks.

The COVID-19 pandemic has dealt a crushing blow to all components of our everyday life, making it fully felt that what was conceived is not always realized, and plans can change instantly, whether you like it or not. But at the same time, the coronavirus gave an incredible impetus to the development of organizations: it made it possible to evaluate employees, discover their new talents and abilities, learn new things, introduce technologies and solutions that will continue to improve work efficiency. And most importantly, the pandemic made it clear that by speaking openly about the existing difficulties, solving them together, you can cope with any problem.

State of HealthCare in the world after COVID-19 Outbreak

General Overview

Saudi Arabia's healthcare system is considered one of the best and most modern in the world. All medicine here is free, not only for local citizens, but also for pilgrims, and thanks to high health care costs (over 8% of the budget), medical care in the kingdom has reached a very high level in recent decades. In every administrative region and district, even in the most remote, there are at least 2 clinics with a modern set of equipment and well-trained personnel (there are almost two hundred medical institutions in the country in total). Moreover, two thirds of hospitals are subordinate to ministries and departments, and another third are private clinics. The King Fahad Medical Center in Riyadh, for example, is the largest medical center in the Middle East. And a special detachment of almost 12 thousand doctors, nurses and other medical staff is allocated annually to serve the pilgrims, who are obliged to provide the entire set of necessary means of assistance, and free of charge. All primary care will be provided free of charge. When contacting private doctors, immediate cash payment will be required, public clinics provide services within the insurance system. Full international medical insurance is highly recommended. At least this was the case before the COVID-19 pandemic outbreak.

Many scholars have studied the impact of COVID-19 on the healthcare systems of their specific countries. One can mention Chang Liang et al. [16], Dumas et al., [17], Saqlain et al. [18], Balhareth et al. [19]. They have found that the novel coronavirus disease (COVID-19) outbreak is testing the strength of national health systems, their resilience, preparedness and emergency

response. The rapid spread of COVID-19 highlights the urgent need to strengthen the health workforce as an integral part of any sustainable health system.

Health workers are the backbone of the health care system. Millions of members of this profession, by its very nature, risk their health every day in doing their jobs. But who is protecting the healthcare workers themselves, who are at the epicenter of the fight against the COVID-19 pandemic? In order to provide them with the protection they need in the long battle to save lives ahead, the highest priority must be given to respecting their labor rights and providing them with decent working conditions.

By April 10, 2020, the World Health Organization (WHO) had confirmed over 1.4 million cases of COVID-19 and over 87,000 deaths in more than 200 countries, areas and territories [20]. By April 8, 2020, WHO had reported 22,073 cases of COVID-19 among healthcare workers in 52 countries. However, WHO says that in the absence of systematic reporting, the number of infected healthcare workers in the world is likely to be underestimated. Infection of healthcare workers has become common since the onset of the pandemic [21]. According to a survey in China, by February 2020, there were 3,019 cases of COVID-19 infection among healthcare workers, of which 1,716 were confirmed (3.8% of all confirmed cases, of which 63% in Wuhan) [22]. Of the total, 14.8% of cases were classified as severe or critical, with five deaths. In Italy, as of April 9, 2020, there were 14,066 confirmed cases of COVID-19 infection among healthcare workers, i.e. more than 10% of all infected⁶. In Ireland, one in five cases of COVID-19 infection has been confirmed among healthcare workers. In Togo, there were five cases of infection among health workers, i.e. 8.6%.

However, many countries do not systematically collect data on the number of infected health workers because they do not have adequate reporting mechanisms in place. In addition, many reports do not disaggregate data on infected health care workers by household and occupational sources of infection, but instead aggregate case data from all sources. With every infected healthcare worker, another gap appears in the ranks of the pandemic fighters. Therefore, the issue of paramount importance is the safety and health of health workers. Health care workers are particularly at risk of contracting COVID-19. Now it has become known that the two main ways of transmission of the virus are direct contact with patients and infection by airborne droplets. It is not yet known how long the virus can remain active on surfaces⁹. This exacerbates the risk of contact transmission from the patient to caregivers such as laundry workers, cleaners, and those involved in the disposal of clinical waste.

The protection of healthcare workers is primarily concerned with preventing the infection and spread of COVID-19. Transparency and timeliness of dissemination of information on transmission routes is of key importance. Personal Protective

Equipment (PPE) and training in its proper use are also critical [23]. Specific infection control measures such as visual warnings, respiratory hygiene and coughing practices, wearing a mask, isolating individuals with symptoms of respiratory infection, and airborne infection protection measures can help prevent respiratory infection of healthcare workers and patients in hospitals [24].

Only 30% of respondents reported that their employer had enough personal protective equipment in case of a sharp increase in the number of patients infected with COVID-19, according to a recently published survey of members of the National Nurses United in the United States. Only 65% were trained in how to put on and take off PPE safely in the past year. In addition, according to reports from the United States, there are no clear guidelines on when and where masks should be used. At some facilities, healthcare workers have been reprimanded for making patients uncomfortable wearing face masks, while at others they have been threatened with dismissal for openly complaining about lack of PPE and working conditions during the pandemic [24].

The International Council of Nurses and the Italian Association of Nurses have warned of the serious consequences of a shortage of PPE for healthcare workers. With shortages or low-quality PPE, healthcare workers treating COVID-19 patients are at high risk of infection. The widespread infection among healthcare workers is creating new constraints in the healthcare system and increasing the burden on colleagues replacing those who go into quarantine for at least 14 days [25].

Wearing PPE such as masks and goggles throughout your shift can be uncomfortable due to heat, skin irritation and difficulty breathing. Preliminary data from Wuhan, China on the COVID-19 outbreak show a high prevalence (up to 97%) of skin irritation and injury with PPE use and an increase in the number of cases with increased PPE wearing duration [26].

A survey at Wuhan University Zhongnan Hospital found that long work hours and insufficient hand sanitization also increase the risk of COVID-19 infection among medical staff [27]. This underscores the need for consistent adherence to safety and health regulations as an integral part of the overall health administration system. A number of ILO methodologies provide detailed recommendations regarding the protection of health workers [28].

Great importance is also attached to the timely provision of information and open dialogue between health workers and employers. Health care workers and employers should communicate up-to-date information on clinical protocols, guidelines, measures and solutions that ensure their effective implementation, as well as work situations that put health care workers at risk [29].

The COVID-19 pandemic is putting healthcare workers in an exceptionally difficult position. In addition to the heavy workload, they are afraid of becoming infected themselves and passing the

infection on to family and friends [30]. Health workers and their mental health are also affected by the general climate of unrest among the general population.

A mental health study of 230 medical workers at the Third Level Hospital for Infectious Diseases for COVID-19 in China found 23% of those who are experiencing anxiety and 27% of those suffering from stress among workers facing the COVID-19 outbreak. Anxiety is more common in nurses than in doctors [27]. Busy hospital administrators and workers need psychological support to cope with long shifts, high workloads and unprecedented death rates. In many countries where schools have closed and public life has come to a halt, health workers, many of whom are women, are fulfilling their professional responsibilities in an increasingly demanding environment where they have to organize family life and take care of households, especially children, sick or disabled [31].

In addition, health care workers in areas where multiple cases of COVID-19 are reported face a difficult choice between public health priorities and the wishes of patients and their families regarding treatment [31]. The consequence of making difficult decisions can be anxiety up to stress and post-traumatic disorders.

Experience with other infectious outbreaks, such as the Ebola epidemic in West Africa in 2014, suggests that health workers may be subject to violence, discrimination and stigmatization in society and in the immediate environment because of the fear of infection. In a number of countries, healthcare and other public service workers are considering moving to alternative housing during the pandemic, such as affordable hotel rooms, to protect their families from the risk of COVID-19 infection.

An integral part of the COVID-19 response should be to support healthcare teams and their families and friends, provide healthcare workers with information and guidance on how to manage stress, and provide counseling for those suffering from post-traumatic stress [30]. The ILO Guidelines on decent work in public emergency services outline measures to prevent and address stressors and their consequences.

In the context of the COVID-19 outbreak, many healthcare workers have to cope with a heavy additional workload, long hours at work and no rest. In many countries, in connection with the increase in the number of hospitalizations, overtime work has become widespread [32]. In some countries, medical workers have been limited in their vacation entitlement to ensure that sufficient medical personnel are always present during the COVID-19 pandemic.

Fair working hours help to strike a balance between the well-being of medical workers and the needs of the medical service. However, in emergency situations, health care workers are forced to work in abnormal and sometimes atypical conditions. The ILO

Guidelines on decent work in public emergency services (2018) set out the principles for establishing working hours during an emergency. The ILO Nursing Personnel Convention, 1977 (No. 149) and its accompanying Recommendation No. 157 set out standards for the fair hours of work for nurses [33]. The Convention provides that nurses enjoy conditions at least equivalent to those of other workers in the country concerned. Conditions of particular relevance during the pandemic include: hours of work, including the regulation and compensation of overtime, inconvenient working hours and shift work; weekly rest; maternity leave; sick leave; social Security. The Recommendation provides that temporary exceptions to the provisions concerning normal hours of work should be permitted only in case of emergency. In addition, the Annex to the Recommendation provides that “overtime work should be performed on a voluntary basis, except in cases where the interests of the patient may be affected or there are not enough people willing to do it.”

To ensure sufficient health workers are available during the COVID-19 outbreak, some countries are turning to the professional assistance of volunteers from other sectors such as the military, retired doctors, medical students and nurses. Thus, the head of the Irish Health Service called on all health workers of all specialties not currently working in public health to register in the country and be ready to take on duty. Following Ireland’s lead, Kenyan healthcare workers have launched a ‘Kenya Calling’ call on social media to join forces in the fight against COVID-19. In Germany, it was proposed to expedite the issuance of work permits to foreign health workers who are already in Germany and are awaiting the presentation of registration certificates. Medical schools in the UK are urged to expedite the preparation of undergraduate medical students and remove the requirement for clinical examinations in order to speed up medical certification as much as possible. The UK authorities have also called on retired medical professionals to return to the National Health Service [31]. Many other countries are following the same path, including Kenya and South Africa, where campaigns have been launched to recruit additional health workers.

With unemployment on the rise in many countries and in view of the uneven distribution of the medical workforce, the idea of training local paramedics to strengthen the response to the pandemic is gaining popularity. The training of local paramedics has long been practiced in countries experiencing a shortage of health personnel. During recent outbreaks of infectious diseases, such as the Ebola epidemic in the Democratic Republic of the Congo and other countries in West Africa, thousands of local health workers were trained there, working as part of multidisciplinary teams of specialists involved in the prevention, diagnosis and treatment of villagers, Ebola victims and those at risk. The local response strategy with prevention and infection control methods is increasingly used in countries to strengthen

the response to COVID-19 experiencing a shortage of healthcare workers [32]. During recent outbreaks of infectious diseases, such as the Ebola epidemic in the Democratic Republic of the Congo and other countries in West Africa, thousands of local health workers were trained there, working as part of multidisciplinary teams of specialists involved in the prevention, diagnosis and treatment of villagers, Ebola victims and those at risk. The local response strategy with prevention and infection control methods is increasingly used in countries to strengthen the response to COVID-19 [32].

Along with ensuring occupational safety and health, other conditions of employment must be created, including social protection, wages, rest periods and work schedules. Governments should consult with the social partners on monitoring and managing temporary work during a crisis, as appropriate. Inexperienced newcomers and retirees returning to work are particularly susceptible to infection and therefore need adequate protection. Governments must also ensure that health workers and new recruits are properly supervised and organized to ensure that they are all trained and have up-to-date skills needed to work in a pandemic.

Gender Issues

During a pandemic, women face particular challenges. They make up over 70% of all health workers in the world [34]. Women bear the brunt of unpaid work to care for children or elderly family members. Women’s contribution to health care is estimated at almost 5% of global GDP, although almost 50% of their labor contribution is not actually recognized or paid [34]. Women employed in the medical and social sphere, as a rule, are represented in occupations where a low level of qualification is required; they earn less and are at the bottom of the job hierarchy, resulting in a gender gap estimated on average at 26% in high income countries and 29% in upper middle income countries [34]. During a pandemic, women have to cope with, among other things, the difficult task of balancing increased workloads, fears of transmitting the virus to their loved ones, and home care responsibilities [34]. To alleviate this burden, some healthcare facilities provide free child care services to their employees. Governments must ensure that measures are in place to support healthcare workers, especially those who have the added burden of caring for their homes [34].

Previous outbreaks have highlighted the importance of gender analysis in shaping public health emergency preparedness and response, as women play a key role in providing informal care and being at the forefront of health workers. The burden of responsibility on the shoulders of health care workers with family responsibilities, most of whom are women, highlights the urgent need for flexible and predictable working hours that are gender sensitive and that enable and assist men and women

to better balance work and family responsibilities [35]. Relevant recommendations are contained in the Annex to the Nursing Personnel Recommendation, 1977 (157): “In the organization of working time, every effort should be made to distribute shift work, overtime and work at inconvenient hours on an equitable basis between nursing personnel and in particular between permanent and temporary, as well as full-time and part-time staff, and take into account, as far as possible, individual wishes and special considerations such as climate, means of transport, family responsibilities, etc.”

Additional difficulties in providing home care for the elderly and sick arise from restrictions on movement and fear of infecting others. This care is mainly provided by women, who make up 88% of all personal care workers. For example, in Germany, migrant workers are in high demand as home care workers. The COVID-19 outbreak has led to a significant drop in the number of visitors from Eastern European countries heading to Germany to work in the care economy. The German Association of Homecare Workers and Nurses predicts that from mid-April between 100,000 and 200,000 people in need will no longer be able to enlist care services at home. The association is calling for incentives for homecare workers to stay in Germany, as exemplified by Austria, where a bonus of 500 euros per month is paid to keep such migrant workers.

Social Aspect

Voice participation is a critical tool for workers, employers, and other health care stakeholders to play an active role in responding to the COVID-19 outbreak [36]. The freedom to express their concerns, for example, on safety and health issues, or the right to refuse work if, in the opinion of medical professionals, they or others may be endangered, as well as their right to organize and freely participate in dialogue, are important principles that need to be upheld even in emergencies like the COVID-19 pandemic [33].

Around the world, many unions are actively participating in the COVID-19 response by providing advice and regular updates to their members, engaging in dialogue with employers' organizations and governments, and mobilizing members to actively help during the outbreak [37].

Public Services International (PSI) has released a briefing note on union response during the COVID-19 outbreak that provides guidance on key issues affecting workers. He launched the “Public Health Once and for All” public health campaign, highlighting the critical response to the COVID-19 outbreak while advocating reforming health systems to put people first; PSI emphasizes the importance of public health systems that are well funded, staffed and equipped to meet future public health challenges.

The Michigan Nursing Association has filed a complaint

against a medical facility for preventing nurses from using their own protective masks. This demonstrates the important role that trade unions and associations can play in addressing the challenges facing health workers.

In Argentina, a federation of health workers' associations has reached an agreement with the government to guarantee that all quarantined health workers will receive full wages and be entitled to free public transport during the pandemic through government subsidies. In Italy, the government and social partners have entered into a new collective agreement on the safety and health of health workers. Social dialogue is important not only for emergency preparedness, but also for improving the effectiveness of emergency response and coordination. It is necessary for the timely exchange of information and the resolution of issues such as occupational safety and health, increased workload and increased responsibility.

COVID-19 Impact and Reaction of Saudi Arabia HealthCare and Comparison

Policies

Despite the fact that the HealthCare system in Saudi Arabia is one of the most profound in the world, COVID-19 has had a significant impact on the quality of services provided by the Saudi medical staff to all those who inquired for help in the period of the pandemic [37].

The ability of health systems to reorganize rapidly through the mobilization of health workers while maintaining essential uninterrupted services is both critical and challenging. The main measures include occupational safety and health, decent working conditions, psychological support for health workers, training and education to quickly retrain health workers and recruit new health workers in accordance with the requirements of the health system. Emergency preparedness also includes optimizing service platforms such as telemedicine.

New technologies, such as online and mobile medical applications, 3D printing and artificial intelligence, are helping to improve the quality of medical services and improve the practice of doctors during a pandemic. Mobile phone location data is used to track the spread of COVID-19 at the national level [16]. In the country, medical students work at a call center where patients with severe symptoms can call and get a referral for treatment. With the introduction and scaling up of the use of digital technologies to inform, educate and guide health workers, especially in poor and remote areas, transparency and quality of services, as well as the effectiveness of administration in a pandemic, can increase [17].

The health sector is one of the main sources of employment: in most regions of the world, the growth rate of employment in the health sector is higher than in other sectors. In the global health and

social sector, there were over 105 million jobs in 2013, 130 million jobs in 2018 and about 136 million jobs in 2020. Saudi Arabia is no exception. In addition, health systems have the potential to create more decent jobs by stimulating the development of other sectors, such as manufacturing technological equipment [18].

The UN High-Level Commission on Health Employment and Economic Growth recognized health as one of the key sectors of the economy and noted the need to invest in building its workforce to achieve the Sustainable Development Goals. However, the data show that almost all health systems face challenges in recruiting, deploying and retaining a sufficient number of well-trained, supported and motivated health workers. It is estimated that by 2030 there will be a shortage of 18 million health workers worldwide and that the shortage will primarily affect low- and middle-income countries [18].

The unequal distribution of the health workforce between and within countries is an obstacle to health equity; the shortage of health workers primarily affects the poorest segments of the population, especially in rural areas. In 2014, the proportion of the population without access to health services due to a lack of health workers was estimated at 84% in low-income countries, 55% in lower-middle income countries, and 23% in upper-middle income countries [18]. In a number of countries in Africa and Asia, more than 90% of the population does not have access to medical care in the context of an acute shortage of health workers (less than three health workers per 10,000 people). In Saudi Arabia, the statistics are about the same.

Although the private sector is playing an increasing role in the delivery of health services in many countries, the public health sector's leading role in ensuring equal access to health care as a human right is especially evident in times of crisis. For many years, the growing commercialization of medical services has been of concern to a number of parties. Amid the ongoing COVID-19 pandemic, some countries, are stepping up the role of private hospitals by integrating them into the public health system during the crisis [18]. Government officials say this approach will ensure health system coherence with around 2,000 additional beds and expand testing and treatment resources, which will have a significant and much-needed impact in strengthening the public health system's ability to respond to the crisis. Perhaps this example will become an example for Saudi Arabia to follow in the future. But at the moment, the state is trying to solve all the problems associated with the Covid-19 pandemic with the help of its own resources [19].

While the focus is on protecting and supporting healthcare workers at the forefront of the fight against COVID-19, the pandemic is impacting all actors in the healthcare system, including self-employed workers and healthcare businesses [19].

These include many workers in the health service and care

economy who are currently at the forefront of the fight against infection and are at serious risk of infection. Therefore, the lack of universal sickness benefit coverage is identified as one of the main challenges to the successful implementation of strategies to contain the coronavirus; concrete steps are already being taken in a number of countries to rectify the situation [18]. The COVID-19 crisis is opening up significant gaps in coverage not only for health services, but also for sickness benefits, depriving health workers and the care economy who are engaged in non-standard forms of employment or self-employment. Instability of income in the event of illness or care for sick family members forces them to go to work even when they feel unwell and increases the risk of infection. In addition, the risk of impoverishment of the sick and their families is exacerbated [18].

Health-care workers should have access to treatment and financial compensation for contracting COVID-19 at work through special occupational injury insurance schemes or, if such insurance schemes do not exist, through direct compensation from employers in accordance with the 1964 Convention on benefits in cases of industrial injuries (121).

The government has urged the healthcare system to minimize patient contact with essential services and, where possible, to postpone preventive and scheduled appointments. While these measures aim to reduce the risk of infection transmission and free up healthcare system resources, they are expected to have a negative impact on the income of doctors and dentists, as the number of patients visiting them is significantly reduced, and ongoing operating costs, such as renting offices and powering medical devices, are saved. Thus, the medical association is currently clarifying the possibilities for obtaining short-term compensation for injured doctors, seeking to inform its members as soon as possible about the options for obtaining compensation payments. Despite the loss of part of their income, doctors are preparing for an increase in workload after the lifting of social distancing measures and the restoration of the normal functioning of health systems [37]. Hospitals suffer significant losses when national preparedness strategies require them to free up beds through discharges and postponing elective surgeries. The German Hospital Federation estimates a financial loss of 3.7 billion euros and is concerned about the financial viability of several hospitals. The Federation called on the Federal Ministry of Health to consider the possibility of covering additional costs caused by emergency measures, including those related to full-time and additional medical staff [37].

International Cooperation

The global shortage and unequal distribution of skilled health workers are making it difficult to respond to outbreaks of unexpected and easily transmitted infections such as COVID-19. As the pandemic continues to spread, even well-resourced

healthcare systems are on the verge of breaking down trying to fight back. The skyrocketing number of cases highlights the urgent need to strengthen under-resourced health systems to withstand the COVID-19 outbreak [37]. This involves addressing health workforce issues and expanding the network of diagnostic laboratories, epidemiological surveillance mechanisms and risk communication strategies. Many countries cannot build their capacity immediately. Therefore, global action is needed to support these countries' responses to disease outbreaks and other emergencies [37].

In Europe, several countries are facing enormous challenges in caring for and treating an unprecedented number of hospitalized patients. This has generated notable displays of international solidarity from countries such as China, Cuba and the Russian Federation, which have sent doctors and equipment to hard-hit countries, including Italy, to provide local assistance in the fight against the pandemic. At the same time, cross-border cooperation between countries is being strengthened. For example, in areas on the border between France and Germany, patients are being transferred from overloaded French hospitals to facilities with free beds in Germany, and Switzerland and Germany are accepting intensive care patients from Italy [38].

This highlights the dire need for adequate public spending to build strong, resilient and health systems that are first and foremost able to provide equitable access to quality health care in general and that have sufficient resources to respond to unexpected disease outbreaks such as the COVID-19 pandemic [38].

Public health and its financing

In addition to adequate social protection for health workers in the context of the COVID-19 crisis, it is equally important to ensure that the entire population has access to affordable health care. Social protection plays a key role in preventing and mitigating a health crisis. This means, above all, avoiding the impoverishment of individuals and households as a direct result of their seeking medical care, as well as promoting preventive measures in the home [38].

Public health is consistent with the principles of a rights-based approach to achieving universal health coverage that provides financial protection and effective access to health services. Mechanisms for collective financing of public health, through social security contributions, taxes, or both, have a positive redistributive effect and do not shift financial and labor market risks to individuals. Accordingly, economic considerations prior to seeking medical care, when such a need arises, do not become a reason for delaying or refusing care. This is especially true in a health crisis caused by infectious diseases [38].

In response to the COVID-19 crisis, many governments are taking action by channeling additional budgetary funds into the

health care system. For example, the United Kingdom government has provided \$6.1 billion in the largest fiscal stimulus package in 30 years to support the National Health Service [38]. The Spanish government has allocated one billion euros to the Ministry of Health, the Italian government has allocated 3.5 billion euros to fight the pandemic, and the German government has taken a series of financial measures to guarantee funding for hospitals, outpatient clinics and long-term care facilities to cover the cost of fighting the COVID-19 pandemic. In a number of countries, such as Spain, where health care is provided privately and where service providers are generally not part of social health programs, such integration actions have been taken as part of the anti-crisis response. This highlights the importance of creating a coherent health care system in which the state has a central role and which can be supplemented by a private offer of medical services under government regulation. In countries where the financial burden of health care is borne by households or covered by voluntary private insurance, governments are forced to expand public health measures to prevent deprivation among the population [38].

A strong and well-designed funding structure is needed to encourage health care providers to meet the criteria for universal access, availability, acceptability and quality of care in accordance with human rights and international social security standards, and to strengthen the national health system as a whole. This requires close and effective coordination between the parties in financing, procurement and health care delivery.

Limitation of the Study

The above literature review has helped cover the important topic of the matter. The literature review covered the COVID-19 pandemic, the theoretical framework of quality healthcare service provision, clinical practice guidelines indicators and the impact of COVID-19 on the attainment of these indicators in the cases of terminal ailments. However, these articles have not featured the effects of coronavirus on the performances of the clinical indicators in Saudi Arabia. Therefore, there is the need to introduce a new study that will evaluate the impact of coronavirus and its control measures on health care quality indicators in Saudi Arabia's primary care.

Research Question

The primary research question is, "what were the effects of coronavirus and its control measures on the results of health care quality indicators in Saudi Arabia's primary care during its peak?"

Hypothesis

The COVID-19 pandemic hurt the health care quality indicators in Saudi Arabia's primary care during its peak.

Methodology

The methodology segment is a crucial area of a study since it features the research technique, collecting data,

information analysis, and findings. Several studies have shown that methodology is the basis of any investigation and provides directions to the following levels of research.

Data Used

Data on the impact of the virus on healthcare quality indicators would be drawn from 300 participants identified through purposive sampling. These participants will come from Riyadh and Alqassim provinces. However, the number of participants that will contribute to this study will be 220. Fifty participants (n=50) wrote to decline their participation in the study. On the other hand, 20 participants did not grant consent to collect their information about changes in quality healthcare indicators. Besides, 10 participants admitted it was their first-time visit to a hospital by themselves. Thus they cannot gauge the differences in the services now and then. Therefore, the study has decided to remain with 220 respondents as the final number. The participants will be strictly patients booking for outpatient and inpatient services. The characteristics of patients include their income, age and the purpose of visit. The study will consist of patients from all income backgrounds. Still, the focus will be on middle and wealthy patients because of their widespread presence in social media and other digital platforms.

At the same time there is a dire need to understand how medical staff themselves perceived the load and stress during the peak of COVID-19 in Saudi Arabia with their opinion on how it was managed. All of the participants will be additionally asked whether one is a medical worker or not. Naturally, all responses are anonymous and confidential. This is mentioned in the disclosure note that all participants are provided prior to starting the questionnaire. It is imperative to understand how the COVID-19 pandemic influenced the individuals in terms of stress.

There will be an online questionnaire, where participants will fill the closed-end questions presented in the template. Some of the primary questions asked will include questions about age, gender, profession, place of work, geographic region, years of visitation of a particularly preferable healthcare center and explanation of their previous and current experience with quality healthcare indicators. Most of the questions will be designed using a Likert scale where respondents respond to questions ranging from 5-Strongly Agree, to 1-Strongly Disagree.

Earlier communication will be made to participants to alert them about the availability of the online questionnaire to fill. The online template is download from the internet, with the information present being listed in the above discussion. As part of the study, the participants will receive emails during their visitation to healthcare facilities. The study will collaborate with the administration to ask patients if they will be willing to engage in the survey. Acceptance will include allowing the study to use the email address and contacts to communicate about the availability of the study. Participation would be voluntary, and the respondents will not be entitled to any financial or non- financial incentives. The study would require the approval of the Ethics Review Board Committee of the Central Ministry of Health in Riyadh, Saudi Arabia or other relevant authority dealing with the ethics of a study. The study period will commence in November upon approval by the instructor.

Variables

The dependent variables of this study are the healthcare indicators (follow-up of chronic diseases, control of chronic diseases, screening, vaccinations and quaternary prevention) and overall perception self-reported by the patient. Any changes in the independent variable will result in changes in the dependent variable. Conversely, the independent variable of the study is the change in COVID-19 variants. Any new changes in the coronavirus variant will present a new challenge to the dependent variables.

Data Analysis and Presentation

The study will present its findings in percentages before its analysis using Chi- square (descriptive statistics). The statistics will be conducted using SPSS or excel software as the results will be similar.

Findings

Out of the 220 participants, all have completed the study successfully. The majority of these respondents (56.9%, n=125) have stated that the quality of healthcare services reduced drastically during the COVID-19 pandemic (Table 1). Close to 73.2% (n=171) have agreed that follow-up of chronic diseases only reduced (Table 2).

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Disagree	46	20.9	20.9	20.9
	Neither Agree Nor Disagree	49	22.3	22.3	43.2
	Agree	69	31.4	31.4	74.5
	Strongly Agree	56	25.5	25.5	100.0
	Total	220	100.0	100.0	

Table 1: Healthcare_quality_decrease.

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Strongly Disagree	68	30.9	30.9	30.9
	Disagree	93	42.3	42.3	73.2
	Neither Agree Nor Disagree	41	18.6	18.6	91.8
	Agree	12	5.5	5.5	97.3
	Strongly Agree	6	2.7	2.7	100.0
	Total	220	100.0	100.0	

Table 2: Follow_up_same_level.

Only 34% of the participants insisted insist that control of chronic conditions did not improve during the pandemic. In continuation, 74.5% (n=164) of the participants have argued that screening reduced when they visited health facilities (Table 3).

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Strongly Disagree	40	18.2	18.2	18.2
	Disagree	124	56.4	56.4	74.5
	Neither Agree Nor Disagree	56	25.5	25.5	100.0
	Total	220	100.0	100.0	

Table 3: Screening_Same.

Further, 85.5% (n=188) of the respondents noted that the level of vaccination reduced during the pandemic (Table 4).

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Strongly Disagree	115	52.3	52.3	52.3
	Disagree	73	33.2	33.2	85.5
	Neither Agree Nor Disagree	26	11.8	11.8	97.3
	Agree	6	2.7	2.7	100.0
	Total	220	100.0	100.0	

Table 4: Vaccination_increased.

Additionally, 75% (n=165) of participants agree that quaternary prevention was decreased during the coronavirus period. Coronavirus had a severe impact on the healthcare facilities visited by the respondents (Table 5).

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Strongly Disagree	61	27.7	27.7	27.7
	Disagree	104	47.3	47.3	75.0
	Neither Agree Nor Disagree	55	25.0	25.0	100.0
	Total	220	100.0	100.0	

Table 5: Quaternary_inspections_increased.

Of immense interest is the fact that as much as 83.6% (n=184) participants have experienced a high level of worry during the COVID-19 pandemic (Table 6).

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Neither Agree Nor Disagree	36	16.4	16.4	16.4
	Agree	120	54.5	54.5	70.9
	Strongly Agree	64	29.1	29.1	100.0
	Total	220	100.0	100.0	

Table 6: High_level_worry.

Of all the participants 78.2% (n=172) have shown that they have experienced severe mood swings during the COVID-19 pandemic (Table 7).

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Neither Agree Nor Disagree	48	21.8	21.8	21.8
	Agree	81	36.8	36.8	58.6
	Strongly Agree	91	41.4	41.4	100.0
	Total	220	100.0	100.0	

Table 7: Mood_swings.

COVID-19 pandemic and quarantine have had a significant impact on the structural change in the life of all the participants. As much as 85% (n=187) have agreed to this in the process of survey fulfillment (Table 8).

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Neither Agree Nor Disagree	33	15.0	15.0	15.0
	Agree	179	81.4	81.4	96.4
	Strongly Agree	8	3.6	3.6	100.0
	Total	220	100.0	100.0	

Table 8: Structural_change_life.

The overall result from the participants in terms of their health state show that 38.2% (n=84) have disagreed that their health state has remained stable during the COVID-19 pandemic. Whereas as much as 61.8% (n=136) have neither agreed nor disagreed (Table 9).

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	Disagree	84	38.2	38.2	38.2
	Neither Agree Nor Disagree	136	61.8	61.8	100.0
	Total	220	100.0	100.0	

Table 9: Health_state_stable.

In the ANOVA analysis of the received results it is clear that there is a significant connection between the perception of the level of healthcare as understood by patients and medical staff alike and the medical treatment received at the hospitals. All of the variables, such as Follow_up_same_level, Screening_Same, Vaccination_increased, and Quaternary_inspections_increased have a significant connection to the overall state of healthcare in Saudi Arabia during the COVID-19 pandemic. The Sig. anchor point of the p-value demonstrates a value of .00 which is well below the well established statistical standard of 0.005. Thus, one can say that COVID has had a significant impact on the level of healthcare in Saudi Arabia (Table 10).

		Sum of squares	df	Mean square	F	Sig
Follow_up_same_level	Between Groups	31.483	3	10.494	12.700	0.000
	Within Groups	178.494	216	0.826		
	Total	209.977	219			
Screening_Same	Between Groups	11.407	3	3.802	9.845	0.000
	Within Groups	83.429	216	0.386		
	Total	94.836	219			
Vaccination_increased	Between Groups	35.793	3	11.931	25.202	0.000
	Within Groups	102.257	216	0.473		
	Total	138.050	219			
Quaternary_inspections_increased	Between Groups	20.631	3	6.877	15.602	0.000
	Within Groups	95.206	216	0.441		
	Total	115.836	219			

Table 10: ANOVA.

Discussion

COVID-19 has affected the performances of almost all sectors in Saudi Arabia. However, healthcare faced the most significant problem since the pandemic is medically related. A total of more than 56.9% of respondents stating that corona affected healthcare quality indicators is because of the confusion it has generated in the established sector. On the other hand, the argument by the participants (more than 73.2%) that follow-up of chronic diseases will reduce is because of the shift in the attention of medical providers from other medical conditions to coronavirus. The low percentages of respondents on screening and the control of chronic diseases is because of the increases in surveillance of the risks this medical condition presents to a person with underlining conditions (diabetes, cardiovascular diseases and respiratory diseases). The level of vaccinations and focus on medicine extended to patients reduced during this period because of a shift in focus to coronavirus war. Healthcare indicators help pinpoint any problem that would be facing patients when handling their cases. During the COVID-19 pandemic, there were shifts of focus from chronic diseases to COVID-19 ailments. There were arguments about prioritizing these medical conditions, with coronavirus emerging as the most urgent and life-threatening of the two. Accordingly, there was a reduction in the quality of services offered by hospitals, as shown by the findings. The study result supports the hypothesis that COVID-19 hurt healthcare services indicators.

The World Health Organization (WHO) has released the results of a preliminary study on the impact of COVID-19 on health systems. Experts drew conclusions on the basis of data obtained from 105 countries located in all five regions of the world. Between March and June 2020, almost every country (90%) experienced disruptions in the provision of health services, with low- and middle-income countries facing the most difficulties.

The COVID-19 pandemic has unsettled even the most seemingly well-oiled medical systems. Most of the countries that provided data reported that they had to suspend many elective and additional services, focusing on emergency care to save the lives of “covid” patients. Moreover, in some countries experiencing economic difficulties, there is a high risk of temporary abandonment of even such important measures as screening and treatment for cancer or HIV.

What happened?

According to reports, due to limited resources - both financial and personnel, a number of planned medical events had to be abandoned. First of all, problems arose with the implementation of immunization, both at home (in 70% of countries) and in medical institutions (61%). There were difficulties with the diagnosis and treatment of non-communicable diseases (69%), family planning and contraceptive measures (68%), prevention and treatment of mental illness (61%), diagnosis and treatment of cancer (55%). Countries also reported failures in the diagnosis and treatment of malaria (46%), case detection and treatment of tuberculosis (42%) and antiretroviral treatment (32%).

While some health services, such as dental care, may have been intentionally suspended by government decision, their absence for several months can have detrimental effects on public health in both the short and long term.

Not only planned services had to be canceled: in almost a quarter of the countries there were failures in the work of emergency services. For example, in 24-hour emergency care in 22 percent of countries, blood transfusion points in 23 percent, in almost one in five countries there were problems even with urgent surgical operations.

What is the problem?

The reasons for the failures in the health care system, experts say, fit into the classic formula of supply and demand: while the need for inpatient care has increased dramatically during the coronavirus pandemic, the need for outpatient services has decreased: people preferred not to go to doctors unless absolutely necessary. In addition, many doctors and health workers had to urgently change their specialty and take up the fight against

COVID-19. Interruptions in the supply of necessary equipment and medical supplies also played a significant role in reducing the volume of medical services for the population.

How to get out of this situation?

Introducing the report, WHO Director-General Dr Tedros Adhanom Ghebreyesus mentioned that this study has revealed problems in health systems, but this information should form the basis for developing new strategies to improve health care during and after the pandemic. Ghebreyesus is confident that doctors should not be left with a choice, health systems should be prepared to deal with similar epidemics in the future - without compromising the provision of other medical services.

The experts of the world organization have developed a number of recommendations to help health systems survive in difficult conditions. Many countries have already begun to implement some of them to mitigate the effects of service disruptions. Among them are methods of prioritization in the provision of medical care, the transition to online consultations with patients, changing the practice of prescribing drugs, establishing supply chains for necessary goods, as well as timely informing the population. However, one of the WHO-recommended measures is one that countries are slow to implement: only 14 percent of countries have decided to cut or eliminate service fees to help financially distressed patients.

WHO continues to work with countries and provide assistance to address the impact of COVID-19. In particular, the organization is developing a web-based platform for the global exchange of data and experience on COVID-19. It is expected that with its help, doctors from around the world will be able to familiarize themselves with advanced methods of treating the disease and combating the pandemic. And at the regional level, WHO experts are conducting research to help countries assess the long-term impact of disruptions caused by the pandemic and develop strategies to mitigate such consequences.

Conclusion

The study on the impact of coronavirus on the quality of services extended during the COVID-19 period will be necessary. Findings show that the virus affected healthcare services indicators. Despite the discovery aligning with majorities of studies, the primary limitation will be the researcher's experience. Minimal knowledge in statistics is evident with the choice of Chi-square as the method of analyzing data. Typically, this study would require complex approaches such as correlation and covariance. Therefore, future studies will need to examine the connection between COVID-19 and poor healthcare services in Saudi Arabia.

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