



## **COVID-19's Economic Impact on the Global Health Systems: Time to Respond to New Realities**

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### **Author's contribution**

*The sole author designed, analysed, interpreted and prepared the manuscript.*

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### **ABSTRACT**

Around six months have passed since the emergence of an ongoing coronavirus-related health pandemic. In resource-limited countries, healthcare systems with fewer options for intervention are likely to face more economic difficulties. The goal of this review is to summarize and explore the cost and economic effect of COVID-19 on global health systems. The study starts with a crisis synopsis and costs of COVID-19 treatment, then discusses how health has been affected and approaches to alleviating the burden while at the same time limiting an inevitable income loss. Even if it is difficult to project COVID-19 spending because there are many uncertainties about the disease and its future course, various reports have quantified the amounts spent on direct COVID-19 treatment in different countries. The healthcare sector around the world has faced catastrophic financial challenges and experienced the largest global recession in history. Most governments in the world cannot avoid the devastating economic impact of COVID-19 on the healthcare sector, but they can try to avert the worst effects. With the spread of the coronavirus, the healthcare systems are facing a financial crisis as a result of actions that countries have adopted to mitigate the spread of the virus. Therefore, it is crucial to act swiftly and in meaningful ways to minimize the fallout from this shock.

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## 1. INTRODUCTION

The novel coronavirus disease (COVID-19) is a global pandemic that has spread rapidly all over the world [1]. On December 31, 2019, the Chinese Health Authority notified the World Health Organization (WHO) that cases of pneumonia of uncertain origin were reported in central China's Hubei Province [2]. Since December 8, 2019, the cases have been identified, and it was discovered that several patients have worked or have stayed in Huanan Seafood Wholesale, where a cluster of vendors offer carcasses and live specimens of dozens of wild animals [3]. On January 7, 2020, the cases in a small group of patients with symptoms were detected with nasal and throat swabs [4]. The Coronavirus Research Group later identified this disease as the Severe Acute Coronavirus Syndrome 2, SARS-CoV-2 [5], and then the disease was named by the WHO for 2019 (COVID-19). As of January 30, 2020, 7,736 cases had been confirmed with 1,370 cases classified as severe, and there were another 12,167 suspected cases reported in China, whereas 82 confirmed cases outside China had all been detected. At the end of January, the WHO declared a global health emergency for the COVID-19 outbreak [6], recognizing that for some time, it has appeared evident that the virus is foreseen to spread all over countries throughout the world.

Since then, the virus has rampaged around the globe, which presents the global public health security with a formidable challenge. COVID-19 has penetrated over 200 countries and territories with more than 6.4 million confirmed cases causing over 382,000 deaths by June 5, 2020, according to statements from the World Health Organization (WHO) [7]. Recent projections for the pandemic model further estimate that COVID-19 could lead to almost 40 million premature deaths worldwide this year without interventions [8].

As the disease has transformed into a pandemic, the primary approach to try to reduce disease transmission has been to rely on community-based, non-pharmaceutical interventions (NPIs), in the absence of appropriate pharmaceutical preventive or treatment initiatives. These NPIs include closing borders, cutting off flights, closing schools and universities, restricting public events, and ordering the closure of businesses

and even entire industries while also screening, isolating and hospitalizing confirmed cases, and quarantining suspected cases [9].

Several models have been developed and used to examine the effectiveness of different interventions for transmission containment of COVID-19. In order to determine the effect of NPIs on COVID-19 mortality and minimize the overall pressure on health resources and equipment, Ferguson et al. [10] used an agent-based approach. The model projects that COVID-19 would infect 81 percent of the population of Great Britain and the US without any control, and COVID-19 could result in up to 2.2 million Americans dying. In addition, Mizumoto and Chowell [11] investigated changes in the transfer potential of COVID-19 as the outbreak continued to progress through the *Diamond Princess* cruise ship using mathematical modeling and data for time series. When the quarantine was enforced, they reached an increasing reproduction rate and observed a dramatic decline in the effective reproductive number. A stochastic transmission model with data from COVID-19 was used by Hellewell et al. [12] to investigate a range of intervening disease control measures of contact-tracing and isolation, suggesting that the reduction of COVID-19 transmission can be deterred within three months if these measures are highly effective. Kucharski et al. [13] coupled a stochastic transmission model with COVID-19 data from Wuhan and international cases, showing decreased spread with the introduction of travel restrictions.

While NPIs are useful, these measures come with an enormous economic and social price. Limited-resource countries with fewer intervention options are likely to face further problems with this pandemic. This effect is much more significant than the world's great financial crisis of 2007–2008, according to analysts. Countries lowered production and revised their expenses and may have to reduce donations to various programs. This review aims to summarize and discuss COVID-19 's costs and economic impact on global health systems.

## 2. METHODOLOGY

This review begins from a crisis summary and the cost of COVID-19 treatment, then discusses how the health sector has been affected and

provides approaches to alleviate the burden while limiting an unavoidable loss of income.

### **3. RESULTS**

#### **3.1 Effect on the Healthcare Sector**

Approximately six months have passed since the emergence of an unprecedented health pandemic due to coronavirus. The most essential features of the pandemic include larger global expansion, movements of the virus, complexity, severity, high rates of attack, rapid spread, and low population immunity [14]. All aspects of life worldwide have been severely affected by this crisis. As the virus has been spread more widely in several countries, the potential impact of the continued virus proliferation on the healthcare systems could be enormous. The health care systems in these countries are undergoing extraordinary historic financial pressures that carry significant financial implications for providers, payers, and patients as a result of the incredible demand for healthcare services, supplies, and treatments [15]. These pressures are distracting the health care sector's ability to operate normally.

#### **3.2 COVID-19 Treatment: How Much Does It Cost?**

Even if it is difficult to project COVID-19 spending because there are many uncertainties about the disease and its future course, various reports have quantified the amounts spent on direct COVID-19 treatment in different countries. Each of these analyses projects substantial increases in health care spending as a result of an increased hospitalization rate, with most of the analyses estimating 5 million or more additional hospitalizations in 2020 and 2021 [16].

In the US, a new report has confirmed that hospitals and health systems are facing tremendous financial burdens in the fight against COVID-19. The estimated cost of care for medical patients in a FAIR Health report was \$38,221, and the overall gross cost for those with a hospital stay with COVID-19 was \$73,300 [17]. If 80% of the U.S. population becomes infected with COVID-19 coronavirus, it will add \$654 billion in direct expense from approximately 45 million hospitalizations, almost 6.5 million ventilators in service, and almost 250 million hospital bed days (general ward plus the ICU days) as shown in a report in Health Affairs.

According to the same report, if 20 percent of the U.S. population were to become infected with COVID-19, the cost of just over 11 million hospitalizations, 1.6 million ventilators, and over 62 million hospital bed days would come to \$163 billion direct cost [18]. There are approximately 534,964 (operational) acute care beds, including 96,596 ICU beds, and 62,000 mechanical ventilators (20.5/100,000 population) in the US, according to the Society of Critical Care Medicine [19], much less than what is necessary if only 20% of the population is infected.

However, in these projections, the new treatments for COVID-19, such as remdesivir and dexamethasone, which show some benefit in patients with COVID-19 and which might affect spending are not taken into account [20,21]. In general, these drugs may be able to generate net savings to the healthcare system, notably by lowering the duration of hospitalization and the extent of disease. However, this remains an interesting question we leave for future work.

In South Korea, the National Health Insurance Service (NHIS), which covers approximately 98% of South Korea's total population, estimated the average total cost of treatment for an inpatient admission for a severely ill COVID-19 patient to be at 70 million won (US\$57,562), 11.96 million won (US\$9,892) per patient who needs intensive care, 3.31 million won (US\$2,737) at medical clinics, and 4.78 million won (US\$3,953) at general hospitals for a patient with mild symptoms. Based on an assumption that the total number of coronavirus patients will reach 11,000, the total treatment cost would be a minimum of 90.4 billion won (US\$74,761,414), and a maximum of 98.5 billion won (US\$81,460,169) [22].

In France, the COVID-19 test and treatment fees are paid by the public health insurance, as in other European countries, such as Iceland, Norway, Liechtenstein, Switzerland, and the United Kingdom. The French Hospitals Federation (FHF) reported that the coronavirus crisis has resulted in additional costs for public hospitals estimated between 600 and 900 million euros, for the first two months of the epidemic. European countries, in general, experiencing very high levels of expenditure, equip beds in intensive care, buy protective equipment, tests, and drugs, or even pay the additional hours of nursing staff and staff who come in for reinforcement [23].

### **3.3 Loss of Revenue from COVID-19**

The healthcare sector around the world has faced catastrophic financial challenges and experienced the largest global recession in history. Hospitals and health systems have had to cope with higher operating costs since people are told to physically separate themselves and minimize human interactions. As a result, many individuals who would otherwise use healthcare services prefer to stay at home. Healthcare providers also have the loss of patients, particularly those with a complicated need for treatment, who defer services that are not desperately needed. Furthermore, imaging, operations, and visits for filling prescriptions are delayed, keeping healthcare facilities free in order to lower the risk of catching the virus when dealing with COVID-19 patients.

Some medical care offices have shown a decrease of up to 70% in the use of health services, which translates to a significant drop in income. COVID-19 may cost hospitals over \$200 billion between March and June 2020 according to another study released by the American Hospital Association (AHA), owing in part to the loss of health systems revenue [24]. Although the report projected losses only through June 30, it is not clear when the nation will return to some sense of normalcy. The admission of non-COVID-19 patients in hospitals is still expected to continue to be whittled down after June 30, which would continue to affect the healthcare sector. Even the famed Mayo Clinic is expected to lose \$3 billion in revenue. To absorb the impact of COVID-19, the clinic rolled out a plan to reduce operating expenses, including a reduction in pay of about one third that will affect 70,000 Mayo Clinic employees on the Minnesota, Florida, and Arizona campuses and all Mayo Clinic Health System sites [25].

The longer the recession lasts, the more economic harm will be caused. Despite all unprecedented government support programs for the healthcare sector, it is unlikely that healthcare will shift toward economic recovery and get back to pre-COVID-19 levels anytime soon. The sustained decrease in the use of health services could be harder to ameliorate because relief funds will not last forever.

### **3.4 Antagonizing the Economic Impact of COVID-19**

Most governments in the world cannot avoid the devastating economic impact of COVID-19 on

the healthcare sector, but they can try to avert the worst effects. There is no exact playbook for this situation; however, it underscores the importance of integrating the government's strategic plans to be balanced with economic realities.

### **3.5 Government Budget Reprioritization**

Long-term plans, schemes, and public budgets have to be reviewed to ensure the containment of the COVID-19 outbreak and mitigate the deleterious effects of the pandemic. Drawn funds from regular budget sources or national emergency reserves (contingency funds) and private donations from individuals and businesses should not be relied on as a primary source of additional funding. Where they are available, it may be beneficial to route the funds through the domestic system to reduce the risk of duplication and increase efficiency. Therefore, effectively responding to COVID-19 requires a significant adjustment in the government's budgets via transferring funds between government ministries and departments to reflect new priorities. Long-term goals may remain the same, but the path to achieving these goals has changed. Many governments around the world revised their budgets and have already provided additional funding for the healthcare sectors in recognition of the impact of COVID-19 on this important sector [26]. A shift in effectiveness and efficiency should lead to a shift in priorities. Therefore, all countries will need to establish processes to coordinate, ensure complementarity, and align funds for a comprehensive, government-wide response. Healthcare sectors and finance authorities should work closely together to ensure reallocated funds are drawn selectively from non-urgent activity rather than generated through cuts across the board, to provide robust cost estimates for funds reallocated to health, and to respond quickly if further allocations are needed.

### **3.6 Provider Revenue Stability Through Innovative Service Delivery Methods**

In contexts where payment methods reflect service outputs and volume reductions in the delivery of non-COVID-19 services, which can be a primary source of revenue for many organizations, it may lead to a sudden fall in provider revenue. Although medical care that is delayed now will ultimately be obtained, and medical staff will collect payments later on, an economic downturn is still challenging for

healthcare personnel and healthcare systems. It depends on how long the spread of COVID-19 persists and how long it might take for life to begin to recover.

Providers can strengthen revenue during the COVID-19 crisis by rapidly adapting how services are delivered, including making greater use of home-based care, teleconsultations, and other forms of remote delivery. Many practices can use a telemedicine approach to deliver care while reducing the risk of spreading COVID-19 to patients and staff, as well as extending coverage to understaffed areas. In a survey of 500 U.S. healthcare consumers conducted the week of March 22, 2020, over 59 percent of people who responded were more likely to use telehealth services now than before COVID-19 became a concern [27]. The health insurance fund in Estonia allows the usage of technology for some hospital services, such as specialist consultations, physiotherapy, and mental health nurse consultations to be provided remotely with timely and high-quality medical care, paying for them using the standard tariff [28]. In Ireland, general practitioners (GPs) are enabled to conduct remote consultations for all conditions, and the fee will be payable to GPs [29]. Several other countries, such as Germany, Luxembourg, Netherlands, and Slovakia, have expanded the scope of services for non-COVID-19 care to take place by telephone or other remote means [30]. Such methods can ideally help to minimize the pressure by mitigating unpreventable income loss while ensuring that the pandemic and other forthcoming emergencies are adequately prepared for.

#### 4. CONCLUSION

With the spread of the coronavirus, the healthcare systems are facing a financial crisis as a result of actions that countries have adopted to mitigate the spread of the virus. Therefore, it is crucial to act swiftly and in meaningful ways to minimize the fallout from this shock. Effectively responding to COVID-19 requires a significant adjustment in the governments' budgets while adapting new methods of how services are delivered.

#### CONSENT

It is not applicable.

#### ETHICAL APPROVAL

It is not applicable.

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#### COMPETING INTERESTS

Author has declared that no competing interests exist.

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