

The Economic Dimension of COVID-19 and Holistic Pandemic Management

COVID-19'un Ekonomik Boyutu ve Bütüncül Pandemi Yönetimi

Mehmet Ferit Can¹

PhD, Assoc. Prof, Hatay Mustafa Kemal University, Faculty of Veterinary Medicine, Department of Animal Health Economics and Management, Antakya, Turkey.

Summary

Objective: The present study aims to provide an overview of the economic dimension of the pandemic and to develop a holistic management approach towards reducing the burden of COVID-19.

Material and Method: The methodological framework of this paper includes classification of the adverse impacts of the outbreaks, economic losses due to previous pandemics and COVID-19, and what kind of actions can be taken to reduce economic losses from the point of view of the principles of “holistic management” and “health economics”. The author carried out a detailed review of literature and searched many databases.

Results: Today all countries, all sectors, and all socio-economic strata of society have been severely affected by the COVID-19. The overall impact of the pandemic on the global economy was estimated at over 10 trillion US dollars. The most prominent losses were due to the recession in global trade, rising unemployment, revenue losses in the global aviation industry, and tourism-related adverse effects.

Conclusion: Properly implemented holistic management is essential to limit the negative effects of the pandemic. In order to manage the pandemic more effectively and in accordance with the One Health concept, all health-related professional groups should work together. Some basic suggestions are as follows: (i) emergency action plans must be prepared before outbreaks, and national health infrastructure must be strengthened; (ii) adequate global funds must be created in fighting the crisis, and global solidarity should not be postponed to next generations; (iii) governments must be in good coordination with media groups, and a common language should be created among the actors. Back to normality could take many years depending on the epidemiological and economic realities as well as the administrative skills of the world leaders.

Key words: Economic loss, COVID-19, pandemic, outbreak, management

Özet:

Amaç: Bu çalışma, COVID-19'un ekonomik boyutunu gözden geçirmeği ve pandeminin yükünü azaltmada bütüncül yönetim yaklaşımını geliştirmeği amaçlar.

Gereç ve Yöntem: Çalışmanın metodolojik çerçevesini salgınların olumsuz etkilerinin sınıflandırılması, geçmiş pandemiler ve COVID-19 kaynaklı ekonomik kayıplar ve bu kayıpları azaltmada “bütüncül yönetim” ve “sağlık ekonomisi” perspektifinden ne çeşitli tedbirlerin alınabileceği oluşturmuştur. Yazar literatürü detaylı biçimde gözden geçirmiş ve çeşitli veri tabanlarını taramıştır.

Bulgular: Günümüzde tüm ülkeler, tüm sektörler ve toplumun tüm sosyoekonomik katmanları yeni tip korona virüsten (COVID-19) ciddi biçimde etkilenmektedir. Pandeminin küresel ekonomi üzerindeki toplam etkisinin 10 trilyon ABD dolarını aştığı tahmin edilmektedir. En öne çıkan kayıplar; küresel ticaretteki durgunluk, artan işsizlik, havacılık sektöründeki gelir kaybı ve turizm kaynaklı olumsuz etkilerdir.

Sonuç: Pandeminin negatif etkilerini sınırlandırmada doğru biçimde uygulanacak bütüncül yönetim anlayışı esastır. Salgını daha etkin ve tek sağlık kavramıyla uyumlu biçimde yönetmek için sağlıkla ilişkili tüm meslek grupları beraber çalışmalıdır. Bazı temel öneriler aşağıdaki gibidir: (i) salgınlardan önce acil eylem planları hazırlanmalı ve ulusal sağlık altyapısı güçlendirilmeli; (ii) krizle mücadelede yeterli fonlar acilen oluşturulmalı ve küresel dayanışma sonraki nesillere ertelenmemeli; (iii) hükümetler medya gruplarıyla iyi bir iletişim içinde olmalı ve aktörler arasında ortak bir dil oluşturulmalıdır. Normale dönüş epidemiyolojik ve ekonomik gerçeklerin yanı sıra dünya liderlerinin yönetsel becerilerine de bağlı olmak üzere yıllar alabilir.

Anahtar Kelimeler: COVID-19, ekonomik kayıp, pandemi, salgın, yönetim

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Introduction

The novel coronavirus outbreak (COVID-2019), our invisible common enemy, emerged in China, in December 2019. Afterwards, with the beginning of 2020; COVID-19 did not remain as only China's problem but became such a serious global concern that it was described as a pandemic by March 11, 2020. The pandemic very quickly spread throughout the other continents like a suddenly raging fire, which is the answer to the question of why we have been facing such devastating medical and socio-economic consequences (1,2,3,4). As yet, epidemiological characteristics of the infection, playing a decisive role both on the local and global economy, indicate high morbidity and relatively low mortality rates. As of middle of July 2020, the number of confirmed cases and deaths from all around the globe reached 14 million and 600 thousand, respectively (2). In this sense, it should be indicated here that human life is more valuable than anything else and it cannot be easily represented with any statistics or economic value. On the other hand, considering the large variety of effects from health to socio-economic aspects, we have to admit that the coronavirus pandemic has been causing maybe the biggest impacts on the global community compared to major biological, natural or economic disasters experienced in the past decades (5,6,7).

Although the pandemic is still not fully illuminated, we know that nearly sixty percent of all human infections are transmitted from animals (8), and associated with this context, several studies have reported a relationship between bat meat consumption or interaction with bats and human coronavirus infections (9). Therefore, due to close relation, interconnectedness, and cooperation among humans, animals, and ecological health, the One-Health approach can be useful to consider in any outbreak management (10). And more importantly, the approach will also allow us to look at the economic impacts of this type of pandemic outbreaks. Another important point about this concept is that both human and animal health economics are very helpful in understanding the effects of coronavirus pandemic.

It is commonly known that health economics has some complexities and difficulties such as

uncertainties of biological systems, the presence of positive or negative externalities, and government involvement. But, in fact, economics and health are much more connected with each other than we usually think. For instance, especially transboundary or zoonotic diseases do not only result in illness, death, and medical expenditures; they can also negatively affect society in various ways with deterioration in the supply chain, rising food security concerns, recession in global trade, rising unemployment rates, tourism-related adverse effects, and environmental pollution. Hence, epidemics and/or pandemics cause enormous economic losses around the world. In this sense, public resources should be allocated to the most effective opportunities, solutions, and infection control measures (11,12,13,14).

The only way to be successful in fighting the pandemic is to have a good and comprehensive management plan. In order to develop the right management strategies against COVID-19, it is necessary to complete three basic steps. Firstly, we have to know the direct and indirect effects of infectious diseases. Secondly, we should investigate the global economic burden of the former outbreaks. Lastly, we need to understand the importance of a holistic management approach, which may be the most difficult to deal with. This approach is a multidimensional decision-making process including issues of public health and infection control (I), economic and financial measures (II), media management and communication (III), and psychosocial well-being of society (IV).

The present study aims to provide an overview of the economic dimension of the coronavirus pandemic and to develop a holistic management approach towards reducing the overall burden of COVID-19.

General Methodological Framework

A three-phase approach was adopted in this article. The framework of this paper includes classification of the adverse economic impacts of infectious diseases, estimated economic losses due to previous outbreaks and the COVID-19 pandemic, and finally what kind of actions can be taken to reduce economic losses from the point of view of the principles of holistic management and health economics.

The author carried out a review of scientific literature and searched many databases, such as PubMed, Medline, Web of Science and Google scholar. The relevant secondary data were also collected from various sources, including institutional reports, websites, and famous newspapers in the world.

Since the coronavirus pandemic is a new phenomenon, the paper mostly focused on the recent studies, reports and policy documents. The study findings were summarized in tables and outcomes were interpreted to provide better insight into the impact of COVID-19.

Classification of the Economic and Financial Impacts of Infectious Diseases

To understand the economic aspect of the COVID-19 pandemic, we should firstly focus on the adverse economic impacts of infectious outbreaks, especially those of global significance. There is no doubt that both epidemics and pandemics have a great number of negative effects depending on various factors, such as epidemiological characteristics of the infectious disease, control strategies implemented by authorities, and socio-economic structure, financial facilities, and geographical position of the respective country together with preferred public relations and media management strategies. The negative impacts of outbreaks can be summarized under two headings, namely direct and indirect effects, on the basis of scientific literature (12,14,15,16,17,18) and the authors' experience, given in Table 1, according to their characteristics and functions.

Indeed, Table 1 gives us broad insight into the characteristics and negative impacts of infectious outbreaks and also tells us the importance of losses. As can be seen here, direct and indirect losses differ from each other in terms of their characteristics; so, decision-makers should take this into consideration when they handle the matter. To exemplify this, indirect economic losses are like the bottom of an iceberg, and they require more detailed action plans and a multidisciplinary approach. Continuing in this way, indirect ones should not only be defined as negative externalities but, instead of that, direct and indirect impacts must be evaluated in an integrated framework which is necessary to select both optimal infection control measures and accurate economic analyses.

A reasonable question to ask may be whether all of them are preventable or not. We can simply say “no” and should focus on avoidable losses rather than all items, due to the limited resources we have. Well, what will happen in case of any global outbreak? There is no single answer, but it largely depends on financial resources available, as well as the management skills and style of ruling parties and international organizations. This issue will be addressed in the following section, namely “holistic management approach.”

An interesting question is that of whether it is possible to get positive externalities from global outbreaks. Although this seems quite possible (such as a decrease in crime rates or the growing business of medical suppliers), the effects of positive externalities will be too small compared to losses, apart from the lessons we have learned from endemic or pandemic infectious diseases.

The Estimated Economic Losses about Previous Outbreaks

There have been important outbreaks affecting humanity for centuries, and each of them led to undesirable or unpredictable socio-economic outcomes. In order to fully understand what's going on today, a brief overview of the outbreaks which have happened especially in the last three decades can help us significantly.

The reported national and global losses caused by many post-1990s global outbreaks, some of which were zoonotic, are given in Table 2. Although the scope and time of these scientific reports have differences, the similarity between them is that when outbreaks occur, catastrophic economic outcomes are possible and may even be inevitable. In particular, severe acute respiratory syndrome (SARS), bovine spongiform encephalopathy, and Ebola virus disease (EVD) stand out among the others. The data in the table also offer some insight into today's picture, especially, losses due to SARS can be a partially useful clue to estimate COVID-19 induced economic losses. As is known, geographic distribution and duration of outbreaks, the number of infected and death cases are important parameters to make a comparison. It should also be noted that if reliable data exist, Spanish Flu, which very badly hit most countries between 1918 and 1920, would be an example to use.

Table 1. Direct and indirect economic impacts of outbreaks and their main characteristics

Selected Items and Groups		Adverse Economic-Financial Impacts of Infectious Outbreaks	
		Direct effects	Indirect effects
A. Characteristics of losses	I. Traceability and rapid response	Relatively easy	Relatively difficult
	II. Visible effects beginning to show up	Mostly in a short-term	Mostly in a long-term
	III. Public awareness about the losses	Relatively high	Relatively medium
	VI. The scale of the analysis conducted by researchers	Mostly financial	Mostly economic
	V. Calculation and estimation of the losses	Relatively easy, depending on epidemiological complexity	Not easy, requiring a multidisciplinary approach
	VI. The magnitude of the economic losses	Vary depending on the characteristics of the infection considered and preferred outbreak management approaches/strategies	
B. Typology of losses	I. Losses due to the infection itself and infection control expenditures	Deaths, care and treatment expenses, QUALY ¹ , cost of mandatory quarantine, diagnostic kits, laboratory tests, the workload of health workers, etc.	Social security system costs, emergency infrastructure investments, R&D ² expenditures for drug and vaccine, time off from work due to illness, etc.
	II. Deterioration in the supply chain, in demand, and in trade relations	Shortage in medical-equipment, protective clothing, and drugs supplies, and increases in their unit prices	Drops in demand, temporary or permanent business closure, rising unemployment, food security-related concerns, recession in global trade, downward trends in stock prices, etc.
	III. Tourism and travel-related negative effects together with cancelled events	No direct effect to be mentioned	Socioeconomic losses for individuals due to travel restrictions, a dramatic decrease in tourism-based revenues (hotels, airlines, restaurants, etc.), and unplanned cancellation of important scientific, sportive, and cultural events.
	IV. Political effects and its outcomes	Changing priorities of the health system and growing bureaucratic challenges.	Possible dissolution of international organizations, changing political power balance, and changing priorities of the world leaders.
	V. Adverse psychosocial effects	Psychological effects of the increasing workload on health workers, and fear of becoming infected.	Psychosocial effects of prolonged quarantines and curfews and fear of becoming unemployed in society.
	VI. Adverse environmental and ecological effects	Challenges in the management of medical wastes and pollution.	The cost of environmental and ecological pollution.

1: Quality Adjusted Life Year, 2: Research and Development

Table 2. The economic losses caused by several outbreaks from the 90s to the present day

Name and year of the outbreak	Reporting scale	References used	A brief description of the estimations	Reported economic loss
II. BSE ¹ , 1996	National	(19)	Effect on regional income in Ireland	0.5% loss in regional GDP
		(20)	Loss in sales revenue if the outbreak occurs in the US	US \$15 billion
		(21)	Effect on the Canadian economy	US \$1 billion
IV. SARS, 2003	National	(22)	Impact on China's tourism industry	US \$16.8 billion
	Global	(17)	Total global economic loss	US \$30–100 billion
III. AI ² , 2005	National	(8)	Total global economic loss	US \$40 billion
	National	(23)	Effect on Turkey's poultry producers	39% drop in income
V. MERS ³ , 2012	Global	(24)	Impact of a widening of bird flu	US \$760 million
	National	(8)	Tourism-related effects on the South Korean economy	US \$10 billion
VI. EVD, 2014	National	(25)	The financial loss of only 48 medical clinics	5 billion KRW (≈US \$4 million)
	National	(8)	Predicted GDP ⁴ growth in Guinea for 2015	At the rate of 4% to 0.1%.
VI. EVD, 2014	Regional	(26)	The economic and social burden on West Africa	US \$53 billion
		(16)	Impact on the economies of the three countries	US \$1.6 billion

1: Bovine Spongiform Encephalopathy, 2: Avian Influenza, 3: Middle East Respiratory Syndrome, 4: Gross Domestic Product.

Economic Effects of COVID-19 and Future Prospects about the Pandemic

Today all countries, all sectors, and all socio-economic strata of society have been severely affected by a pandemic that we have rarely witnessed before. Especially indirect effects of it, such as permanent business closure, rising unemployment, revenue losses in the global aviation industry, deterioration in stock markets, cancellation of important meetings, recession in global trade, and psychosocial effects of prolonged quarantines and curfews on society have caused a tsunami-like effect. In this context, what awaits the world after the end of the pandemic is also a matter of curiosity; so, it may

be useful to mention here some of the post-pandemic scenarios.

Predictions and future prospects regarding the pandemic are handled separately under two sub-heads.

Predicted economic effects of the pandemic:

Currently, there are a number of reports, predictions, and forecasts, obtained from mass media agencies, international organizations, and scientific studies, on the economic dimension of COVID-19. Taking different types of loss items into consideration, economic or financial predictions about the pandemic were categorized to give meaningful insight to readers (Table 3).

Table 3. Some of the estimations and predictions about the economic impact of COVID-19

Loss items belongs to the COVID-19		Reporting scale	References used	A brief description of the estimations and predictions	Reported economic impact
Direct effects	I. Medical costs and burden of the pandemic control measures	National	(27)	United States public health and social services emergency fund	US \$100 billion
		National	(28)	German compensation payment to hospitals	€ 560 for each patient
		Global	It has not been reported so far		
	II. Losses due to travel restrictions, and effects on tourism and event industry	Global	(29)	Impact of travel bans on flights	48.200 flights with 10.2 million seats
			(30)	Airline industry's revenue loss	US \$252 billion
			(1)	Cancelled big events	US \$1 billion
(31)			Impact on the travel and tourism sectors	50 millions of jobs loss	
III. Effects on labor and stock markets	National	(32)	Estimated unemployment rate in the US	50% or more of people	
	Global	(29)	Impact on global stock markets	Dow Jones -13% and Nikkei -5%	
		(3)	Income losses due to unemployment	US \$3.4 trillion	
IV. Effects on GDP and economic growth	National	(33)	From 3 to 9 months loss in China's national GDP	Between 0.8 and 1.9%	
	Global	(30)	Fall in the global economic growth rate	From 2.9 to 1.5%	
Indirect effects	V. Effects on world trade	Global	(4)	Decline in world merchandise trade	Between 13 and 32% in 2020
			(34)	Fall in world trade in goods and services	Between 10 and 15% in 2020
	VI. Rapid reactions by central banks	Regional	(27)	Possible refinancing operation by the European Central Bank	US \$3 trillion
Global		(1)	Total central bank spending	US \$4.5 trillion	

The first thing that attracts attention is that estimated losses due to the pandemic are quite large compared to previous outbreaks. There is a question left to be answered: "Can we use economic losses that occurred due to previous outbreaks as a reference for COVID-19?" Of course, it can be done partially, provided that reliable data are available. If the variables belonging to SARS (number of incidences, geographical distribution, duration of the outbreak, induced economic losses with its present value, etc.) are examined, we can infer that economic losses due to the pandemic may be even worse than our estimates. It is pointed out that the pandemic going to destroy economies and will most probably cause a global economic recession (30,35). Another noteworthy prediction is that the economic-political effects of the pandemic will be greater than the collapse of the Berlin Wall or Lehman Brothers (5), and its

financial effects will be worse than the 2008 global financial crisis (6). The magnitude of the economic impact is still uncertain, which makes it difficult for decision-makers to find an appropriate macroeconomic solution (36); however, the global economic cost was estimated to reach about \$3 trillion (37). Note that even this estimate is optimistic because the data presented in Table 3 indicate that the overall impact of the pandemic on the global economy has exceeded \$10 trillion in just a few months. The financial support programs implemented by many countries to mitigate the impact of the pandemic (38,39) may already be considered to be good evidence about the economic dimension of COVID-19. Lastly, another interesting point that is worth mentioning is that there are also some positive externalities, which can, however, be ignored compared to the negative effects of the pandemic.

b. Possible scenarios after COVID-19:

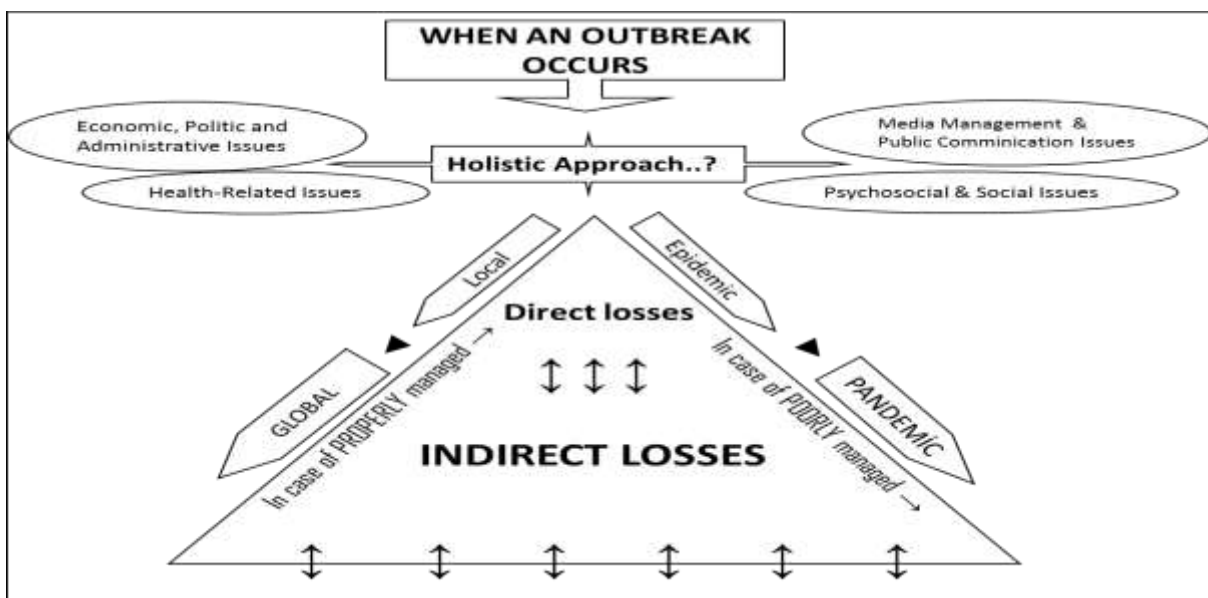
Should we be optimistic or pessimistic about the post-pandemic world? What is awaiting us in the coming months and years? The answers largely depend on the duration of the pandemic and preferred pandemic management approaches, and so the real picture will be better seen within a few years due to the complex nature of the biological, social, and economic systems. Some economic and political forecasts of the pandemic are already available. The economic normalization is predicted to be a long one (31). According to the Organization for Economic Cooperation and Development (OECD), recovering from the pandemic and its effects will take years. OECD secretary-general said, "I do not agree with the idea of a 'V' shaped phenomenon ... It's going to be more in the best of cases like a 'U' with a long trench in the bottom before it gets to the recovery period" (40). Although it is quite difficult to make a precise prediction, permanent economic and political changes are also possible. It is expected that the pandemic will strengthen nation-states, change the power balance between East and West, and finally could start a new type of globalization (5). Among the possible threats after the pandemic are huge public deficits, high unemployment rate, insufficient supply chain, and food inflation. On the other hand, it can also bring some opportunities, such as new working conditions, smart technologies, and cost-efficient

meetings (30), but it should not be forgotten that these opportunities still have many uncertainties.

Holistic Management Approach: What should be done about the Pandemic?

Until now, a large number of measures and actions have been implemented by governments against the pandemic. Though these efforts cannot be underestimated, whether all the measures are taken fast enough or accurately enough is questionable. But more importantly, such multidimensional issues require a holistic management approach that proves to be biologically, economically, environmentally, and socially acceptable. This approach is not an easy task due to the conflicting nature of the objectives, and therefore, we need a comprehensive and balanced management strategy. Figure 1, created by the author, gives a summary concerning outbreak management approaches. As is understood from the triangle-shaped figure, economic losses can be rapidly and significantly reduced as long as the epidemic or pandemic outbreaks are properly managed. Otherwise, losses will increase exponentially beyond acceptable or manageable levels, and thus, sooner or later, will result in economic devastation.

Figure 1. A visual association between losses and outbreak management approaches



There are many components of a holistic management approach that can be used in fighting the COVID-19 pandemic and decreasing its negative effects. To this end, rational suggestions are summarized in five sub-headings given below. Although the first priority must be to try to control the pandemic, all issues mentioned below should be applied simultaneously in order to get balanced results.

I. Health-related issues:

There are many health-related steps to be taken against the pandemic, which can be summarized as follows. To start with, it should be emphasized that the issue is handled as briefly as possible because of the comprehensive nature of the topic. As is known, planning and controlling are the most important components of the management process. Therefore, firstly, emergency action plans and scenarios should be prepared before the emergence of outbreaks like COVID-19. To avoid overwhelming the system, health infrastructure components, especially the number of health workers, intensive care units, and laboratories should be strengthened. Of course, the most important step to overcome the pandemic is to develop a vaccine as quickly as possible. Developing the appropriate treatment algorithm is another important issue in this context. Social isolation is a crucial part of prevention, and for this purpose, some measures are already taken by most countries including temporary closure of schools and shopping centers along with strict travel restrictions and cancellation of important events/meetings. Health literacy is also an important issue to be discussed here. The slogan of "stay home, save lives" will be remembered as an unforgettable motto in the fight against the pandemic. In order to manage the pandemic more effectively and in accordance with the "One Health" concept, health-related professional groups (physicians, veterinarians, scientists, biologists, pharmacists, epidemiologists, etc.) should work together. And lastly, governments must be careful when loosening the restrictions due to the risk of a second wave of outbreak.

II. Economic and financial issues:

The pandemic is obviously putting such increasing pressure on economies that everybody wants to go back to normal as soon as possible.

However, a question is arising: do we have to make a choice between protecting public health and reopening the economy? The answer is simply no because it needs to be a balanced decision depending on some conditions such as the number of infected cases, intensive-care occupancy rates, financial facilities and infrastructure of the governments, and the increase in the unemployment rate as a result of the pandemic. In this context, many countries are gradually loosening restrictions by considering the above-mentioned variables, but, they do not have a magic wand to end or to diminish the economic impacts within a short time. Therefore, returning to normal economic conditions will be time-consuming and costly. To mitigate the impacts of the pandemic, there is a need for strong financial support programs. Currently, most of the countries have started to implement monetary and fiscal policies to support credit markets and economic activity (27). Providing direct financial aids to enterprises, particularly those which are negatively affected and are vulnerable is very important. In this connection, OECD recommended cash transfers to workers including the self-employed (40). The informal economy has also been badly affected by the pandemic and needs to be separately addressed by responsible authorities. Interest rates are another financial tool commonly used, however, lowering borrowing interest rates probably will not work because the demand is already in decline; on the other hand, postponement of tax debts will be useful. A question that comes to mind is, "How much financial resource should be allocated to control this pandemic." In fact, it would not be wrong to say that the economic benefits of intervening against the pandemic will apparently surpass its costs. Continuing from this point, cost-benefit analysis, cost-effectiveness analysis, and cost-utility analysis can be used in making an economic assessment for the control of any outbreak (12,18).

Some governments, such as the United Kingdom, European Union, and the United States are planning to allocate huge financial resources to compensate for the economic damage of the pandemic. The United Kingdom, where millions of workers are facing a crisis, has paid the wages of employees in order to decrease the risk of bankruptcies and layoffs and the government will need to allocate at least £22 bn to support those in need (30,39).

According to European Commission, emergency financial supports would reach €1 trillion (35), and, as another example, the US Congress is expected to approve a \$2.2 trillion stimulus package (38). By approaching the issue globally, international funds must be created by countries to fight the pandemic. There is a piece of good news that dozens of world leaders have pledged \$8 billion to develop vaccines and treatments to fight the pandemic (41). According to Bedford et al. (42) the World Bank's Pandemic Emergency Financing (PEF) facility and other mechanisms can also be used as global financial tools. That may be a good idea, but PEF primarily targets the poorest countries with a relatively limited budget. Therefore, the above-mentioned funds should be large and powerful enough, and, the establishment of the funds should not be postponed to future generations because no one can guarantee that such dangerous outbreaks will never occur again. And lastly, we are realizing the value of producing sufficient and healthy food, and, more importantly, realizing the importance of supply chain management, which are crucial matters in cases of crises. Moreover, the negative economic effects of the pandemic on the agricultural industries can be billions of dollars (43). Therefore, agriculture and livestock enterprises should be supported more effectively than before (44). In addition, strong relationships should be established among food industry stakeholders including producers, retailers, wholesalers, and governments.

III. Media management, public communication, and global coordination issues:

The pandemic has long been at the top of the list in traditional and social media news. Today, due to globalization which is leading to increasing interconnectedness among societies and economies, the impacts of outbreaks do not remain at the local level. Getting easy and fast information from television and internet sources led to increased public awareness about outbreaks, but, at the same time, insufficient communication and bad media management can increase the magnitude of economic effects (15). Indeed, the media has a huge responsibility in informing and directing the public. Governments must be in good coordination with the media groups, and a common language should be created among the actors. In this context, timely, open, and clear communication is the most

important element of good media management, which can reduce or limit public panic/anxiety and mitigate economic losses. It was reported during the SARS outbreak, there was a good example of media management (45), while Swine Flu and Avian Influenza outbreaks were not well managed and turned into a crisis for many countries (15). If we look at the media management during the COVID-19 pandemic, it can be said that the traditional media and its social media extensions are not bad and are even promising; however, the same positive things cannot be said for other social media platforms due to fake news being circulated.

Another important issue is global solidarity and coordination. Pandemics are not something that a country or institution can handle alone due to their complex and sophisticated nature. Therefore, if a pandemic occurs, fast and effective coordination and communication among different occupational groups, institutions, organizations, and countries are essential (33,42). Although some criticize WHO, a global representative of the health system, for not showing a good performance in crisis management, an early declaration of a pandemic could cause a massive fear among peoples and nations (46).

IV. Psychosocial and sociocultural issues:

Many factors that arose after the pandemic, such as fear of becoming unemployed, fear of becoming infected with COVID-19, and extended lockdown, curfew, quarantine, and social distancing are creating psychological problems in individuals and putting increasing pressure on society. Today, millions of people are out of work or school as a result of the pandemic. It is reported that suicide rates and domestic violence in Europe and the United States have slightly risen due to increasing unemployment. Dr. Jay Bhattacharya made an important remark in this regard: "The coronavirus can kill, but a global depression will, as well." (7). Moreover, the existing control measures including isolation and quarantine restricted the individual liberties of citizens and led to ethical discussions (47). As another aspect of the matter, the worldwide closure of schools will not only result in huge learning losses and inequalities in access to education but will also cause additional costs for service providers (48).

Although remote learning partially solves this problem and offers a certain extent of flexibility, it is also creating additional pressure on students, teachers, and parents (7). Panic buying due to a sudden fear of a forthcoming shortage or price rise is another interesting psycho-economic phenomenon to be considered. It would not be easy to solve the above-mentioned problems; however, such efforts can mitigate the negative psychosocial and social effects of the pandemic. For example, increasing collaboration between government and non-governmental media organizations, building new call centers, websites, and strong supply chains, and providing financial supports for the unemployed are likely to reduce the fears and anxieties during the pandemic period.

V. Politic and administrative issues:

All plans, decisions, and suggestions mentioned above can be included in this category. Therefore, there is no need for any additional statement about these matters. Nevertheless, it is worth mentioning the importance of rapid planning and implementation of necessary changes to regulations as well as the timely and decisive implementation of selected policy measures. It is indicated that many countries including South Korea, Singapore, Germany, and Turkey have relatively well managed the pandemic (2,49), but this does not mean anything alone. It must be clearly indicated that we will not fully succeed in pandemic management without global solidarity and conscious commitment, which have to be the top priority for world leaders.

Conclusion

It is concluded that once a pandemic outbreak begins, for which only one infected person is sufficient, catastrophic losses are almost inevitable. The overall impact of the COVID-19 pandemic on the global economy is estimated at over 10 trillion US dollars, which is equivalent to nearly 11% of the world's GDP. The recession in global trade, rising unemployment, revenue losses in the global aviation industry, and tourism-related adverse effects were detected as the most important elements contributing to the crisis. A holistic management approach is essential to minimize

economic losses to acceptable values, especially in such a complex and difficult situation. Although it will take a long time to return to normal, we do have the necessary resources to achieve this. The lessons learned from previous outbreaks and the coronavirus pandemic indicated that adequate global funds must be urgently created in fighting the crisis and global solidarity should not be postponed to future generations. In addition to that, responsibilities to the global village should be shared among governments, professional institutions, mass media, and society as a whole, in order to better manage the pandemic. There is a possibility that we could witness various important changes in the post-pandemic world. However, while some argue that the pandemic forces societies to a kind of global transformation, it is indeed early to say something solid about it. And as a last word, this pandemic has shown that there is a need for a fairer socio-economic system and a more transparent governance structure which seem inevitable to ensure sustainability for our fragile planet as well as for being optimistic about the future.

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Ethical Statement

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Correspondance:

Assoc.Prof.Dr. M.Ferit Can

Mustafa Kemal University, Faculty of Veterinary Medicine, Dep. of Animal Health Economics and Management, Antakya, Hatay, Turkey

Tel: +90.326.2455845 (1516)

E-mail: feritcan@mku.edu.tr