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ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

THE ANALYSIS OF THE PERFORMANCES OF THE HEALTH SYSTEMS OF COUNTRIES DURING THE COVID-19 PANDEMIC*

COVID-19 PANDEMİSİNDE ÜLKELERİN SAĞLIK SİSTEMLERİ PERFORMANSLARININ ANALİZİ

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ABSTRACT

In the study, it is aimed to analyze the impact of the COVID-19 epidemic on the health system performance of OECD countries by using multi-criteria decision-making methods. The research population consists of 38 OECD countries. In the study, using TOPSIS, COPRAS, VIKOR and GIA methods, the countries with the best performance and the safest in the COVID-19 epidemic are ranked and compared. According to the TOPSIS and VIKOR analysis applied, Germany; according to the GIA, Japan; and according to the COPRAS analysis, New Zealand are the countries with the best performance in the health system during the COVID-19 period. At the same time, in the evaluation of COVID-19 safe countries, it is concluded that Germany according to the results of TOPSIS and GIA analysis; and South Korea according to the result of VIKOR analysis are the safest countries with the best performance. The COVID-19 outbreak is thought to be a stimulus for countries to evaluate their health systems and to take the safest countries with the best performance as a guide. As a matter of fact, considering the health plans implemented by these countries, it is recommended to improve health resources in terms of quality and quantity against possible epidemic threats.

Keywords: COVID-19, Health Systems, Performance, Multi-Criteria Decision Making.

JEL Classification Codes: C44, H51, I14, I18.

ÖZ

Araştırmada çok kriterli karar verme yöntemleri kullanılarak COVID-19 salgınının OECD ülkeleri sağlık sistemi performansına etkisini analiz etmek amaçlanmıştır. Araştırma evrenini 38 OECD ülkesi oluşturmaktır. Araştırmada TOPSIS, COPRAS, VIKOR ve GİA yöntemleri kullanılarak COVID-19 salgınında en iyi performansa sahip ve en güvenli ülkeler sıralanarak kıyaslanmıştır. Uygulanan TOPSIS ve VIKOR analizine göre Almanya, GİA'ya göre Japonya, COPRAS analizine göre ise Yeni Zelanda COVID-19 döneminde sağlık sistemi en iyi performans gösteren ülkeler olmuştur. Aynı zamanda COVID-19 güvenli ülkelerin değerlendirilmesinde TOPSIS ve GİA analizi sonucuna göre Almanya, VIKOR analizi sonucuna göre ise Güney Kore'nin en iyi performansa sahip en güvenli ülkeler olduğu sonucuna varılmıştır. COVID-19 salgınının ülkelerin sağlık sistemlerini değerlendirmeleri, en iyi performans gösteren en güvenli ülkeleri rehber almaları açısından uyarıcı nitelikte olduğu düşünülmektedir. Nitekim bu ülkelerin uyguladığı sağlık planları göz önünde bulundurularak muhtemel salgın tehditlerine karşı sağlık kaynaklarının nitelik ve nicelik anlamda iyileştirilmesi önerilmektedir.

Anahtar Kelimeler: COVID-19, Sağlık Sistemleri, Performans, Çok Kriterli Karar Verme.

JEL Sınıflandırma Kodları: C44, H51, I14, I18.

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GENİŞLETİLMİŞ ÖZET

Amaç ve Kapsam:

Küresel bir sağlık krizi olan COVID-19 salgını, hızla tüm kıtalara yayılarak ülkelerin ekonomik, politik, sosyal ve ruhsal birçok alanda etkilenmesine neden olmuştur. Yüksek düzeyde bulaşıcılık etkisi olan hastalık karşısında ülkeler birtakım önlemler alarak pandeminin etkisini minimum düzeye indirmek için mücadele etmişlerdir. Karantina uygulamaları, seyahat kısıtlamaları, tıbbi malzeme tedariki ve üretimi, pandemiye karşı alınan bilimsel önlemler, sağlık kaynaklarının kapasitesini arttırma gibi pandemiyle mücadeleye karşı hazırlık planları yaparken aynı zamanda sağlık sistemlerini de ayakta tutmaya çalışmışlardır. Salgının etksinin oldukça büyük olması nedeniyle dünya ülkeleri durumu yönetebilmek ve kendi stratejik planını oluşturmak mecburiyetinde kalmıştır. Ülkelerin, COVID-19 salgını ile mücadele ederken sağlık sistemleri performanslarının değerlendirilmesi olası diğer salgın/pandemi durumlarına karşı oldukça önem taşımaktadır. Dolayısıyla araştırmada çok kriterli karar verme yöntemleri kullanılarak COVID-19 salgınının OECD ülkeleri sağlık sistemi performansına etkisini analiz etmek amaçlanmıştır.

Yöntem:

Araştırma evreni 38 ülkeyi kapsamaktadır. Verilerin analizinde çok kriterli karar verme yöntemlerinden yararlanılmıştır. Ülkelerin sağlık sistemi performansının değerlendirilmesi için COVID-19 vaka sayısı, ölüm sayısı, vaka-ölüm oranı, vaka-iyileşme oranı, tam aşılanmış kişilerin oranı, sağlık giderlerinin Gayri Safi Yurtiçi Hâsıla içindeki oranı, doktor sayısı, hemşire sayısı, hastane yatağı sayısı ve yoğun bakım yatak sayısı olmak üzere 10 değerlendirme kriteri araştırmada esas alınmıştır. Karantina etkinliği, hükümetin risk yönetimi etkinliği, COVID-19 takibi ve tespit, sağlık uygulamalarına hazır olma durumu, COVID-19 bölgesel güvenlik açığı ve acil durum planı olmak üzere 6 değerlendirme kriteri ile de güvenli ülkelerin performans düzeyleri ölçülmüştür. Araştırmada TOPSIS, COPRAS, VIKOR ve GİA yöntemleri aracılığıyla COVID-19 salgını sağlık sistemleri performansı ölçülerek en iyi ve en kötü performans gösteren ülkeler sıralanmış ve karşılaştırılmıştır. Ayrıca TOPSIS, GİA ve VIKOR yöntemleri kullanılarak yapılan analizle COVID-19 salgınında güvenli konumda yer alan ülkeler tespit edilmiş ve performans düzeylerine göre ülkeler sıralanmış ve karşılaştırılmıştır.

Bulgular:

Araştırmada COVID-19 sağlık sistemi performansının ölçülmesinde kullanılan TOPSIS yöntemi analiz sonucuna göre Almanya, Japonya, Güney Kore, Avusturya ve İzlanda'nın yüksek performansa sahip ülkeler olduğu tespit edilmiştir. COVID-19 pandemisiyle mücadelede Meksika, Kolombiya, Macaristan, Şili ve Slovakya'nın ise en kötü performans gösteren ülkeler olduğu saptanmıştır. GİA yöntemi sonucuna göre Japonya, Güney Kore, İzlanda, Avustralya ve Norveç en iyi performans gösteren ülkeler olarak tespit edilirken Slovakya, Macaristan, Kolombiya, Meksika ve Polonya'nın COVID-19 ile mücadelede en kötü performansa sahip ülkeler olduğu saptanmıştır. VIKOR yöntemi analizinde yer alan dört parametreye göre Almanya, Avusturya ve Japonya en iyi ortak çözüm kümesinde yer alırken; Kolombiya ve Meksika ise en kötü performansa sahip ülkeler arasında yer almıştır. COPRAS yöntemi analiz sonucuna göre ise Yeni Zelanda, Güney Kore ve İzlanda'nın en iyi performans gösteren ülkeler olduğu tespit edilirken; Kolombiya, Kosta Rika ve Meksika en kötü performans gösteren ülkeler olarak tespit edilmiştir. COVID-19 salgınında güvenli konumdaki ülkelerin belirmesinde kullanılan TOPSIS yöntemi analizi sonucuna göre Almanya, İsviçre ve Güney Kore; GİA yöntemi sonucuna göre Almanya, Yeni Zelanda ve Japonya; VIKOR yöntemi analizinde yer alan dört parametreye göre ise Güney Kore, İsviçre ve Almanya'nın en iyi performansa sahip en güvenli ülkeler olduğu tespit edilmiştir.

Sonuç ve Tartışma:

COVID-19 pandemisinin sağlık sistemleri üzerinde oluşturduğu ağır yükü hafifletmek ve minimum seviyeye indirmek için sağlık sistemi kaynaklarının (hekim, hemşire, ekipman vs.) sayısı arttırılarak sağlık sistemleri güçlendirilebilir. Sağlık sistemlerindeki tüm aktölerin de bir bütün halinde hareket etmesi pandemiyi verimli yönetmede etkili olacaktır. Araştırma sonuçlarından hareketle COVID-19 pandemisine karşı kapsayıcı nitelikte sağlık sistemleri bulunmayan ülkelerin sağlık politikalarını revize etmeleri ve herkes için erişilebilir olan hakkaniyetli hizmetin sunulacağı bir iyileştirme yapmaları önerilebilir. Aynı zamanda COVID-19 pandemisinin hastaneler üzerindeki oluşturduğu yükü azaltmak için birinci basamak sağlık hizmetlerine gereken desteğin verilmesi gerektiği düşünülmektedir. Pandemileri kontrol altına almak için ölüm ve vaka sayılarını minimum seviyede tutmada karantina uygulamalarının büyük önem taşıdığı bilinmektedir. Hızla yayılan COVID-19 pandemisinde de karantina önlemlerini önceden uygulamaya başlayan ve izolasyon uygulamalarını istikrarlı bir şekilde gerçekleştiren ülkelerin pandemiyle mücadelede başarılı oldukları gözlemlenmiştir. Bu bağlamda gelecek pandemi veya pandemi tehditlerine karşı ülkelerin karantina ve izolasyon gibi uygulama ve yaptırımlarda etkili olan ülkeleri örnek alarak kendi stratejik pandemi planlarını oluşturmaları önerilebilir. Pandemiyle mücadele sadece bir kamu kurumuyla değil diğer kurumlar ve politika yapıcılarında katkılarıyla olmalıdır. Araştırmada OECD ülkelerinin COVID-19 pandemisine karşı sağlık sistemi performansları tespit edilmiş ve COVID-19 pandemisi güvenlik değerlendirmesi yapılarak ülkeler karşılaştırılmıştır.Araştırmanın COVID-19 pandemisinde ülkelerin sağlık sistemi performansını ölçen, COVID-19 pandemisinde güvenli ülkelerin tespit edilmesi yönünde kapsamlı ve özgün bir çalışma olduğu; ertelenemez ve ikame edilemez sağlık hizmetlerinin öneminin anlaşıldığı bu dönemde yol gösterici olacağı; pandemilerde erken müdahale, stratejik salgın planlamaları, koruyucu sağlık hizmetleri gibi faktörlerin ülkelerin pandemiyle mücadeledeki konumunun belirlenmesinde etkili olacağı ve literatüre önemli katkı sunacağı düşünülmektedir. COVID-19 salgınında yüksek düzeyde performansa sahip ve güvenli konumdaki ülkelerin diğer ülkelere klavuzluk yapması, benimsemiş oldukları yol haritalarının dikkate alınarak sağlık sistemlerini muhtemel salgın tehditi durumlarına karşı revize etmeleri, sağlık kaynaklarının nitelik ve nicelik anlamda iyileştirilmesi önerilmektedir.

1. INTRODUCTION

Pandemics are contagious epidemics that spread to all continents and cause high rates of morbidity and mortality and are seen on such a large scale that they have devastating effects on the economic, social, political, and health areas of countries. The effect of globalization, the increase in travel between countries and continents, the facilitation of communication and communication, the acceleration of urbanization by the increasing population, the destruction of natural environments, and the deterioration of the ecological order have accelerated the emergence of epidemics and the formation of pandemics (Koçer, 2020).

The COVID-19 outbreak first spread to the city of Wuhan and then to the whole of China. The virus, which started to spread from China by air travel in January 2020, was first reported in Thailand. Later, the virus, which was carried by passengers traveling to South Korea, Japan, and America, increased the rate of spread. WHO classified the COVID-19 epidemic, which has a very high contagious effect and continues to spread rapidly, as an "international public health emergency" on 30 January 2020. Italy, one of the European countries, officially reported its first case on 20 February 2020. By the middle of March, cases started to be reported in the majority of the world's countries, and because the virus was seen in 113 countries and reached all continents, WHO declared a global epidemic (pandemic) on March 11, 2020 (Ministry of Health, 2020). The global epidemic COVID-19 has rapidly created crises in all continents of the world, especially in terms of health, economic, social and political aspects. In this process, it is very important for countries to evaluate the performance of their health systems against the threat of COVID-19 against other epidemic threats to come.

The COVID-19 pandemic has affected the lives of many people physically, mentally, economically, and socially and put great pressure on health systems. The rapid spread of the pandemic and the inability to control it have also left health systems in a difficult situation. Governments have to protect the health of their citizens, provide diagnosis and treatment, and provide health services in a cost-effective and safe environment during this extraordinary pandemic period. It is critical to provide these services, which can put a burden on health systems, correctly. Effective use of primary health care services during the pandemic process will facilitate access to services and play an important role in the fight against the pandemic. In this context, OECD countries such as France, Iceland, Ireland, Slovenia, and England have reconsidered the provision of primary health care services and tried to alleviate the pressure on health systems by using primary health care services more actively during the pandemic process (OECD, 2021b).

The coronavirus pandemic is warning countries to reconsider and revise their health systems. Hospitals, doctors, other health personnel, equipment, health devices, technologies, laboratories, medical consumables, etc. Countries have faced very serious problems regarding the number, quality, and adequacy of many elements. It is understood that the solid foundation of health systems is based on social health insurance and countries should provide health services to their citizens in an extraordinary situations. Because in the event of such a pandemic, if individuals have to pay out of pocket, they may avoid getting a diagnosis and treatment, which may cause the pandemic to become unpredictable. Even countries with strong health systems make inferences about how they should proceed in such a major pandemic. With the pandemic, countries can provide early intervention advantages by identifying new diagnoses and treatment methods that are not included in social insurance packages.

Implementation of personal protective health services such as vaccines, personal hygiene, and protective medical equipment (mask, gloves, visor, etc.) in global epidemics not only reduced the rate of transmission and spread of the pandemic but also contributed positively to the intention of people to adopt and exhibit health-protective behaviors. Taking early precautions with preventive health services in the COVID-19 pandemic has provided great advantages to countries. While ensuring personal hygiene creates great awareness during the pandemic period, it has also been suggested that routine vaccination programs should be applied to ensure immunity (Kırılmaz, 2020).

Health system performance can be defined as the realization of targeted goals or the degree of realization (Hurst and Jee-hughes, 2000). However, since the health system has a complex structure, there are no specific standards for the measurement of performance. While reaching outputs in health system performance, the efficiency of resources is emphasized. The efficiency of health systems is possible by comparing the inputs used in producing health services and the situation between health outcomes.

Performance measurement in the health system provides decision-makers with important information for the development of the system and improving its performance. Determining the extent to which health systems have achieved their planned goals is beneficial for performance measurement (Anderson & Husscy, 2001; Konca,

2021). Countries with the poor performance of their health systems should develop health planning and policy to ensure the necessary potential improvements (Şener & Yiğit, 2017).

2. MATERIAL AND METHOD

The population of the research consists of 38 OECD countries. It is assumed that OECD member countries have a homogeneous structure in terms of variables. No sample was selected in the study and the entire population was reached.

The data to be used in the research was accesses from databases. Data regarding health system performances against the COVID-19 pandemic were analyzed by limiting the period between March 2020 and November 2021, and the data was accessed in November 2021. The data for the input variables in the research are current data in 2019 and 2020. However, in the study, data on people fully vaccinated against COVID-19 were taken between December 2020 and November 2021. The start date of the vaccination process may vary due to the fact that the vaccination application varies in each country and the vaccine supply takes place on different dates. The data used in the security assessment was also accessed on 26.11.2021.

In the study, data on COVID-19 used to evaluate the health system performances of OECD countries against the COVID-19 epidemic were obtained from the "Our World in Data" and "Worldometers" databases; Data on health expenditures, number of doctors, number of nurses, number of intensive care beds and number of hospital beds were restricted and accessed online from the "OECD Health Statistics" database between March 2020 and November 2021.

In the research, ten evaluation criteria, including five evaluation criteria related to COVID-19 and five evaluation criteria including indicators related to the health system. These criteria are given below.

1) Number of Physicians (per thousand people)
2) Number of Nurses (per thousand people)
3) Number of Hospital Beds (per thousand people)
4) Number of Intensive Care Beds (per hundred thousand people)
5) Ratio of Health Expenditures to GDP (%)
6) Number of COVID-19 Cases (per million people)
7) COVID-19 Deaths (per million people)
8) Proportion of People Fully Vaccinated Against COVID-19 (%)
9) COVID-19 Case-Death Rate (%)
10) COVID-19 Case-Recovery Rate (%)

The 6 criteria used for COVID-19 safety assessment of OECD countries are listed as follows.

1) Quarantine activity; quarantine scale, quarantine timeline and travel restriction etc. elements,
2) Government risk management effectiveness; economic sustainability, efficiency of the state structure and pandemic preparedness, etc. elements,
3) COVID-19 monitoring and detection; monitoring systems and disaster management, scope of diagnostic methods, testing efficiency, etc. elements,
4) Preparation for health care; availability of COVID-19 equipment, activities of new healthcare services and number and quality of healthcare personnel, etc. elements,
5) COVID-19 regional vulnerability; risk of spread of infection, cultural characteristics and social discipline, chronic diseases, etc. factors
6) Emergency preparedness; these include elements such as social emergency resilience and emergency military mobilization experience.

In the study, non-parametric multi-criteria decision-making (MCDM) methods were applied due to the presence of multiple evaluation criteria and decision alternatives regarding health systems and COVID-19. In a scientific decision-making process, MCDM methods can be applied alone or several methods are used together, depending

on the purpose and criteria of the research. TOPSIS, VIKOR, COPRAS, and GIA methods were used in this study. TOPSIS to determine the health systems performance with the highest and the lowest among OECD countries in the COVID-19 pandemic, GIA to compare the health system performances of OECD countries in the COVID-19 pandemic, COPRAS to rank the highest country as a percentage according to the importance and benefit degrees among the decision alternatives, and The VIKOR method was used to select and rank the alternatives closest to the compromise solution among the decision alternatives. A brief description of the methods is given below.

Before the research data were collected, the ethics committee approval was obtained from the Süleyman Demirel University Ethics Committee Presidency on 01.06.2021 (Number: E-87432956-050.99-62411) with the form in which the subject, scope, purpose and method of the study were specified.

2.1. TOPSIS

"Technique For Order Preference By Similarity To An Ideal Solution" is the abbreviation of the TOPSIS word and its Turkish meaning is known as Ideal Solution, Similarity-Based Sorting Technique. TOPSIS, which is one of the methods used in the decision-making process, is the method in which the best alternative is ranked with the shortest distance from the positive ideal solution and the one with the longest distance from the negative ideal solution by evaluating the alternatives. It is one of the MCDM methods first developed by Hwang and Yoon in 1981 (Hwang & Yoon, 1981). In the method, which is based on the comparison of alternatives according to their closeness and distance from the ideal solution, the alternative closest to the ideal positive and the farthest to the ideal negative is selected. For example, if the goal of return is in question, proximity to the positive ideal solution means maximizing the return, and the distance to the negative ideal solution means minimizing the cost (Özdemir, 2015). In the TOPSIS method, the ranking of the alternatives is done in six steps (Ishizaka & Nemery, 2013; Özdemir, 2015). The application steps of the methods used in the research are shown in Figure 1.

2.2. GIA

Gray Relational Analysis (GIA), which was first applied by Ju Long Deng in the 1980s, is a method used to solve problems with a small sample and incomplete information and digitize uncertain situations (Deng, 1982). In the GIA method, the lack of information or the uncertainty of the situation is based on the concept of grayness. The system without any information is expressed as "black", the system with partial information "grey" and the system with complete information without uncertainty is expressed as "white". The GIA method is a method that compares many alternatives by reducing them to a single numerical value. This method, which can be applied to decision problems where there are complex relations between factors, is frequently used together or alone with one or more of the MCDM methods for solving problems (Köse et al., 2013). The advantages of the GIA method are that it requires little data, is easy to calculate, and does not require any program (Chen & Ting, 2002). In the GIA method, there is an application process that takes six steps to compare and rank among the alternatives in decision problems (Özçalıcı, 2017; Wu, 2002). The application steps of the methods used in the research are shown in Figure 1.

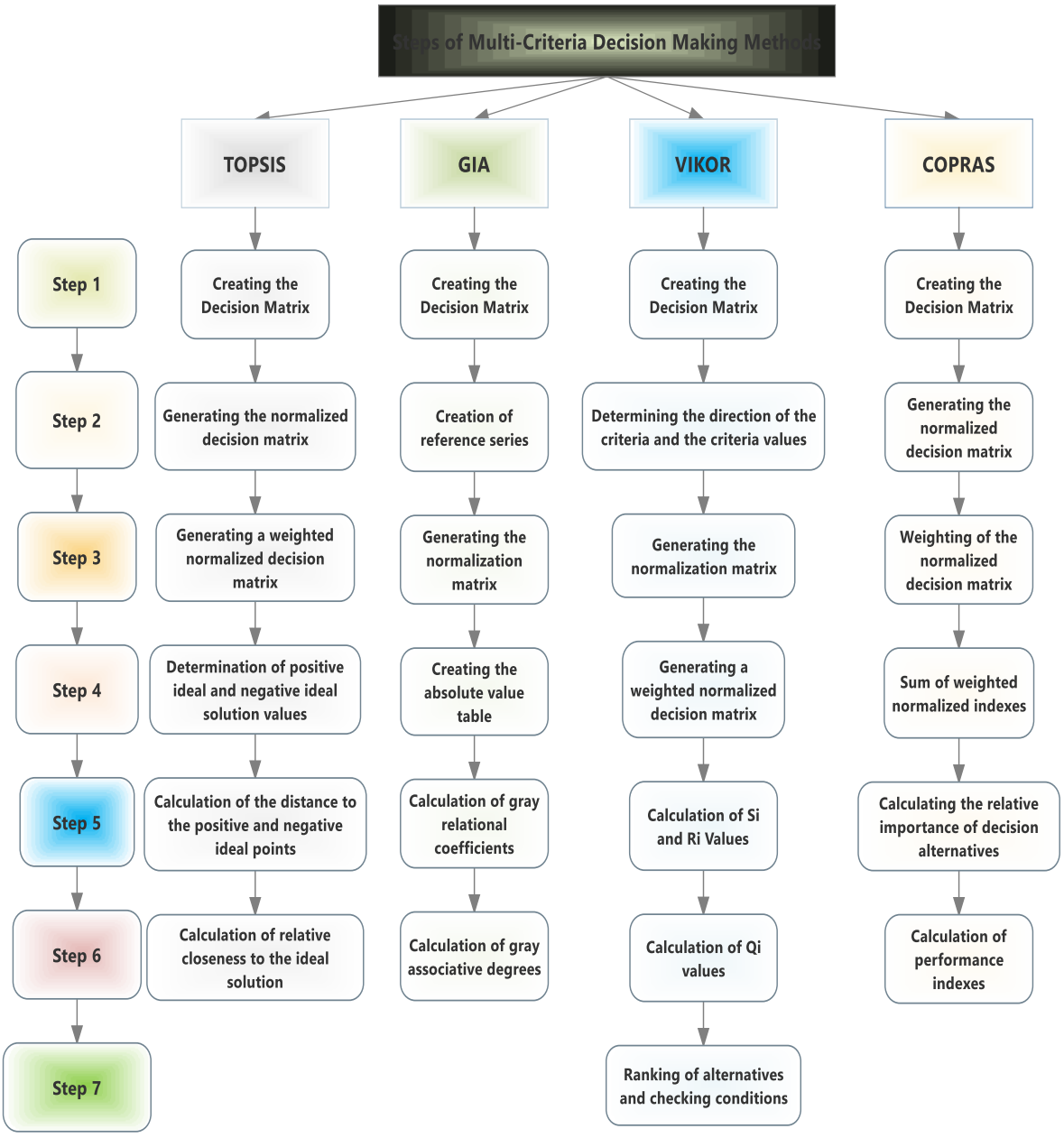
2.3. VIKOR

The VIKOR (Vise Kriterijumska Optimizacija I Kompromisno Resenje) method was presented by Opricovic & Tzeng (2004) as a viable technique in MCDM problems. With this method, complex systems with many criteria are optimized and the best compromise solution can be determined by sorting among the decision alternatives depending on the evaluation criteria (Bolazar & Candan, 2021). The compromise solution is defined as the closest solution to the ideal solution. With the compromise solution, the decision alternatives can be listed and the closest decision to the ideal solution can be made. In the case of criteria with different units, it provides a compromise solution by helping the decision-maker to make the final decision (Opricovic & Tzeng, 2007). The application steps of the methods used in the research are shown in Figure 1.

2.4. COPRAS

COPRAS (Complex Proportional Assessment) method, Zavadskas, et al. It is one of the MCDM methods developed by MD in 1994. In the method, which allows the evaluation of quantitative and qualitative criteria together, evaluation is made according to the maximum and minimum aspects of the criteria, and the alternatives are ranked in terms of importance and benefit. The most important feature that distinguishes the COPRAS method from other MCDM methods is that it both compares the alternatives with each other and shows how good or bad one alternative is compared to the other as a percentage (Zavadskas et al., 1994). The application steps of the methods used in the research were created by the authors using the above-mentioned literature and are shown in Figure 1.

Figure 1. Application Steps of MCDM Methods



3. RESULTS

Based on the evaluation criteria specified in the study, the OECD countries that performed the best in the COVID-19 pandemic with TOPSIS, VIKOR, COPRAS, and GIA methods were listed and compared in Table 1. According to the TOPSIS method, Germany, Japan, S. Korea, Austria, and Iceland were found to be the best performing countries, with 6.866, 6.568, 6.524, 6.317, and 6.174 points, respectively, in the fight against the COVID-19 pandemic from OECD countries. In the fight against the COVID-19 pandemic, Mexico, Colombia, Hungary, Chile, and Slovakia were found to be the worst performing countries with 3.186, 4.163, 4.328, 4.581, and 4.621 points, respectively. Turkey has become one of the countries with the best performance in the fight against COVID-19, ranking 10th with a performance score of 5.911.

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Table 1. Comparison of the Performance of Combating the COVID-19 Pandemic by TOPSIS, GIA, COPRAS, and VIKOR Methods

Countries	TOPSIS		GIA		COPRAS					VIKOR				
	Ci	Rank	Cofficients	Rank	Qi	Pi	Rank	Si	Ri	Qi(q=0)	Qi(q=0,25)	Qi(q=0,50)	Qi(q=0,75)	Qi(q=1,00)
										0	0,25	0,5	0,75	1
Austria	6,319	4	0,584	12	0,028	42,9	10	6	2	2	2	2	3	6
Australia	6,043	8	0,644	4	0,037	56,4	5	5	18	18	9	6	6	5
USA	5,640	15	0,557	17	0,026	39,2	13	18	15	15	19	19	19	18
Germany	6,866	1	0,605	6	0,031	47,3	7	2	1	1	1	1	1	2
Belgium	5,597	17	0,522	28	0,025	38,1	16	16	3	3	3	8	13	16
Chezch Republic	5,636	16	0,530	25	0,027	40,7	11	26	30	30	31	30	27	26
Denmark	6,136	6	0,593	9	0,029	43,7	9	8	19	19	13	9	7	8
Estonia	5,999	9	0,544	19	0,025	38,9	14	22	6	6	10	14	17	22
Finland	5,817	12	0,574	13	0,030	46,5	8	17	31	31	30	27	25	17
France	5,498	19	0,543	20	0,024	36,2	19	14	4	4	5	10	12	14
South Korea	6,524	3	0,682	2	0,043	64,7	2	4	14	14	7	5	5	4
Holland	5,441	20	0,541	22	0,022	34,2	24	19	23	23	23	21	20	19
Britian	4,921	28	0,512	30	0,020	30,6	30	29	27	27	27	28	28	29
Israel	5,381	22	0,542	21	0,021	32,1	26	28	9	9	17	23	26	28
Italy	4,676	33	0,520	29	0,020	31,3	28	25	7	7	12	16	22	25
Ireland	5,408	21	0,538	24	0,022	33,7	25	21	22	22	24	22	21	21
Sweden	5,374	23	0,560	15	0,023	34,9	21	12	25	25	22	18	14	12
İceland	6,174	5	0,669	3	0,040	60,4	3	3	11	11	4	4	4	3
Spain	4,999	27	0,548	18	0,021	31,9	27	20	10	10	14	15	16	20
Japan	6,568	2	0,712	1	0,038	58,2	4	1	21	21	8	3	2	1
Canada	5,548	18	0,586	11	0,024	37,0	17	10	15	15	15	12	11	10
Colombia	4,163	37	0,466	36	0,015	23,3	38	38	31	31	38	38	38	38
Luxembourg	5,713	14	0,539	23	0,024	36,1	20	23	24	24	25	24	23	23
Latvia	4,877	29	0,493	32	0,019	29,6	32	31	5	5	16	26	31	31
Lithuania	5,370	24	0,525	27	0,024	36,2	18	24	13	13	20	20	24	24
Mexian	3,186	38	0,470	35	0,017	25,6	36	37	31	31	37	37	37	37
Hungary	4,328	36	0,462	37	0,020	31,1	29	35	31	31	35	35	35	35
Norway	6,104	7	0,639	5	0,035	54,0	6	7	28	28	21	13	9	7
Portugal	5,191	26	0,594	8	0,023	34,6	22	11	12	12	11	11	10	11
Poland	4,733	32	0,473	34	0,019	28,9	33	34	20	20	28	32	32	34
Slovenia	4,857	30	0,492	33	0,020	30,2	31	32	31	31	33	33	33	32
Slovakia	4,611	34	0,458	38	0,018	28,1	34	36	31	31	36	36	36	36
Chile	4,561	35	0,529	26	0,018	27,5	35	30	25	25	26	29	30	30
Turkey	5,911	10	0,573	14	0,025	38,2	15	27	31	31	32	31	29	27
New Zealand	5,804	13	0,604	7	0,066	100,0	1	13	29	29	29	25	18	13
Greece	5,259	25	0,560	16	0,022	34,4	23	15	17	17	18	17	15	15
Switzerland	5,853	11	0,593	10	0,026	40,0	12	9	8	8	6	7	8	9
Costa Rika	4,744	31	0,502	31	0,016	25,4	37	33	31	31	34	34	34	33

As a result of the GIA analysis, the countries with the best performance in the health system performance ranking of the OECD countries in the COVID-19 pandemic were Japan, South Korea, Iceland, Australia, and Norway, respectively, according to the performance scores of 0.7121, 0.6822, 0.6699, 0.6446 and 0.6390. It was determined that the countries with the worst performance with 0.4585, 0.4625, 0.4665, 0.4701 and 0.4730 performance points were Slovakia, Hungary, Colombia, Mexico, and Poland, respectively. Turkey ranked 14th in the health system performance ranking of OECD countries in the COVID-19 pandemic with a performance score of 0.5731. As a result of the COPRAS analysis, New Zealand (100%), South Korea (64.78%), and Iceland (60.40%), whose healthcare systems performed best in the COVID-19 pandemic; The worst performing OECD countries were Colombia (23.34%), Costa Rica (25.42%) and Mexico (25.62%). Turkey ranks 15th in the health system performance ranking in the COVID-19 pandemic with a score of 38.23%. The Qi values in the VIKOR method analysis result were compared with the Si and Ri values, and their suitability for acceptable advantage and acceptable stability conditions was examined. Considering the parameters q=0.0, q=0.25, q=0.50, q=0.75, and q=1.00 that meet both conditions, Germany, Austria, France, and Belgium are the countries with the best health system performance in the COVID-19 pandemic; Colombia, Mexico, Hungary, Costa Rica, Slovenia, and Slovakia were among the worst countries.

Germany ranked first in the VIKOR and TOPSIS method, New Zealand in the COPRAS method, and Japan in the GIA method. South Korea ranked second in the COPRAS and GIA method, Austria in the VIKOR method, and Japan in the TOPSIS method. Iceland ranked third in the COPRAS and GIA method, South Korea in the TOPSIS method, and Belgium in the VIKOR method. Mexico, Colombia, Costa Rica, Poland, and Slovakia were the last countries in all four methods. Turkey ranks 10th in the TOPSIS method, 15th in the COPRAS method, 14th in the GIA method, and 32nd in the VIKOR method.

According to the COVID-19 safety assessment analysis results of OECD countries, the countries are compared and listed in Table 2. According to the table, Germany ranked first in TOPSIS and GIA methods. The country that ranked first in the VIKOR method was South Korea. According to the TOPSIS method, Switzerland ranks second and South Korea ranks third. In the GIA method, New Zealand is second and Japan is third; In the VIKOR method, Switzerland ranks second and Germany ranks third. Mexico, Costa Rica and Colombia were the countries that ranked last according to all three methods.

Table 2. Comparison of Security Assessment Rankings of OECD Countries According to Analysis Results

Countries	TOPSIS		GIA		VIKOR		
	Ci	Rank	Parameter	Rank	Si	Ri	Rank
Austria	0,6962	7	0,6807	6	7	12	10
Australia	0,7536	6	0,6770	7	5	4	5
USA	0,3126	31	0,4077	33	33	34	35
Germany	0,7889	1	0,7492	1	1	3	3
Belgium	0,3778	25	0,4500	23	23	16	20
Chezch Republic	0,3429	28	0,4113	32	32	27	27
Denmark	0,5839	16	0,6298	8	9	21	16
Estonia	0,4500	19	0,4818	18	17	17	19
Finland	0,6509	10	0,6030	13	10	8	8
France	0,3019	32	0,4194	30	30	34	33
South Korea	0,7676	3	0,7001	5	4	1	1
Holland	0,5916	15	0,5447	16	16	23	22
Britian	0,4877	17	0,4834	17	18	25	25
Israel	0,6836	8	0,6253	10	12	10	11
Italy	0,3847	24	0,4376	26	26	26	26
Ireland	0,4107	21	0,4594	21	20	15	17
Sweden	0,3265	30	0,4399	25	25	24	24

Countries	TOPSIS		GIA		VIKOR		
	Ci	Rank	Parameter	Rank	Si	Ri	Rank
İceland	0,6057	11	0,6282	9	8	7	6
Spain	0,2837	33	0,4152	31	31	29	30
Japan	0,7575	5	0,7209	3	6	9	9
Canada	0,6562	9	0,6078	12	11	6	7
Colombia	0,1171	38	0,3677	38	38	34	38
Luxembourg	0,5974	14	0,6081	11	14	19	15
Latvia	0,4166	20	0,4773	19	19	11	13
Lithuania	0,3738	26	0,4411	24	24	20	21
Mexian	0,1353	36	0,3750	37	36	31	36
Hungary	0,6043	12	0,5867	15	15	18	14
Norway	0,6032	13	0,5973	14	13	13	12
Portugal	0,2027	34	0,3928	34	34	28	29
Poland	0,3964	22	0,4518	22	22	14	18
Slovenia	0,3534	27	0,4352	27	28	34	32
Slovakia	0,3276	29	0,4215	29	29	33	31
Chile	0,1818	35	0,3820	35	35	30	34
Turkey	0,4673	18	0,4712	20	21	32	28
New Zealand	0,7594	4	0,7390	2	3	5	4
Greece	0,3949	23	0,4340	28	27	22	23
Switzerland	0,7830	2	0,7125	4	2	2	2
Costa Rika	0,1338	37	0,3759	36	37	34	37

4. DISCUSSION AND CONCLUSION

In recent years, most countries need a strong health system to improve their health outcomes. This situation necessitates the measurement of health systems performance to strengthen the health system (Şengün & Yiğit, 2021). A strong health system is possible with adequate health resources. However, having more resources does not mean that better results will be obtained. Effective use of expenditures is important at this point. The COVID-19 pandemic, which is a global health crisis, has created a great burden on health systems and it has been tried to respond to this situation by using health system resources.

In this study, 10 different evaluation criteria were used to evaluate the performance of health systems fighting the COVID-19 pandemic. Based on these evaluation criteria, according to the TOPSIS analysis result, Germany, Japan, South Korea, Austria, Iceland, Denmark, Norway, Australia, Estonia, and Turkey were the top ten countries with the best performance. According to the VIKOR analysis result, Germany, Japan, South Korea, Austria, Iceland, Belgium, Australia, Estonia, France, and Switzerland were the top-performing countries. According to the result of the COPRAS analysis, New Zealand, South Korea, Iceland, Japan, Australia, Norway, Germany, Finland, Denmark, and Austria were the top-performing countries. According to the GIA results, Japan, South Korea, Iceland, Australia, Norway, Germany, New Zealand, Portugal, Denmark, and Switzerland were the best performing countries. Mexico, Hungary, Colombia, Costa Rica, Poland, Slovenia, and Slovakia were among the worst-performing countries according to the four analysis results, taking the last place.

When the literature was reviewed, in a recent study, "The Effects of COVID-19 on the Health System" was one of the most studied areas (Erenler & Baydin, 2021). In our research, it has been determined that the best-performing countries in the fight against the COVID-19 pandemic are the countries that allocate the highest share to health expenditures from GDP. As a matter of fact, according to the OECD (2021a) health indicators report; It has been emphasized that there have been serious increases in health expenditures, especially in European countries, with the COVID-19 pandemic. The ratio of average health expenditures to GDP in OECD countries increased from

8.8% in 2019 to 9.7% in 2020. In 2020, the USA was the country with the highest health expenditures from GDP with a rate of 16.8%. While the UK allocated 10.2% of GDP to health expenditures in 2019, this rate was 12.8% in 2020. Germany was also the third country with the highest increase, allocating 12.4% of GDP to health expenditures. It has been stated that countries such as France, Canada, Japan, Norway, and Austria spend more than 10% of their GDP on health services. However, there have been countries that have not been successful in combating the pandemic despite increasing their share of health expenditures. One of the biggest exceptions to this situation is the USA. Although it is the country that allocates the highest share to health expenditures among OECD countries, it has not performed very well compared to other countries in the fight against the pandemic.

Japan, which was identified as one of the best-performing countries in combating the COVID-19 pandemic, has an inclusive healthcare system. In the study by Ceylan (2021), it was emphasized that the main point in Japan's low COVID-19 mortality rate is the existence of a health system that is resistant to infectious disease threats. Public health practices being at the center of health services, advanced medical facilities, and a national health system that is easily accessible to everyone are highlighted as strengths that make Japan stronger compared to other OECD countries in the fight against the COVID-19 pandemic.

In this study, one of the best-performing countries in the COVID-19 pandemic was identified as Germany. Breitenbach (2020), aimed to measure the efficiency of health systems in the first wave of the COVID-19 pandemic. It measured the effectiveness of 31 countries infected in the first hundred days following the outbreak of the pandemic with the DEA method. According to the results of the analysis, it has been determined that 12 countries have flattened the COVID-19 pandemic curve by effectively using quarantine measures, testing, existing doctor capacities, and spending on health, and are efficient in combating the COVID-19 pandemic. Germany was one of the worst-performing countries in the first wave of the pandemic, the study said. Germany could not perform well in the early stages of the COVID-19 pandemic, but later on, it managed to increase its COVID-19 combat performance with the measures, strategies, and practices it took against the pandemic. Hüsmenoğlu & Yılmaz Kuşaklı (2021) aimed to analyze and analyze the situation of pandemic strategies, crisis management, and practices implemented by Germany during the COVID-19 pandemic. According to the results of the research; The factors that brought Germany to the first place in the COVID-19 pandemic; It has been stated that there is sufficient bed capacity, a high number of tests, contact follow-up, intensive care, and ventilator numbers. Thus, he stated that the strategies implemented by Germany against the COVID-19 pandemic caused it to perform well in the international arena.

In her study, Sherpa (2020) examined the impact of health policies on the case fatality rates of OECD countries as a result of the COVID-19 pandemic. It has been found that death rates in OECD countries increase in case of cuts in health expenditures, more doctors per population, and high bed capacity are associated with lower death rates in the COVID-19 pandemic. The importance of accessibility and the publicly financed health system in a global public health crisis revealed the political conclusion of the study. Based on this study, the importance of health system capacity in the fight against the COVID-19 pandemic has been understood. An increasing number of cases has led to an increase in hospitalization rates. In this case, it can be deduced that the health systems of countries without a sufficient number of hospital beds, medical equipment, and doctors are difficult and cause an increase in death cases.

In the study by Yiğit (2020), the performance of 36 OECD countries in combating the COVID-19 pandemic examined by applying the TOPSIS method. As a result of the analysis, it has been determined that the countries with the best performance in the fight against the COVID-19 pandemic in the OECD countries are Slovakia, Latvia, South Korea and New Zealand. In the research we have done, South Korea, New Zealand, and Australia are among the best performing countries in the fight against the COVID-19 pandemic, while Slovakia is one of the worst-performing countries in the last place.

Arsu (2021), in his study, aimed to evaluate the fight of countries against the COVID-19 pandemic with the MCDM method. In the study, nine criteria to evaluate the 35 countries with the highest number of COVID-19 cases (at least 400,000 confirmed cases) (number of doctors, nurses, hospital beds, proportion of health expenditures in GDP, population over 65 years of age, population density, number of COVID-19 cases), number of COVID-19 deaths and number of COVID-19 tests). In the study, the Entropy method was used to weight the criteria, and the Waspas method was used to evaluate the criteria. According to the results of the study, Russia, Germany, Canada, the USA, Austria, and Switzerland are the most successful countries; Countries such as India, Colombia, Morocco, Peru, Mexico, and Bangladesh were found to be unsuccessful. According to our research

results, aiming to evaluate the health system performance of OECD countries, Germany, Austria, and Canada is the best performing countries; Mexico and Colombia were also the worst performing countries.

Orhan and Mutlu (2021) aimed to evaluate their country's fight against the COVID-19 pandemic in their study. In the study, the criteria were weighted with the CRITIC method, and the countries were ranked with the MABAC method to compare the combat performance of the 30 countries with one million or more cases of COVID-19. According to the results of the study, it has been determined that countries such as Germany, Russia, Chile, Belgium, Argentina, Canada, France, Czechia, and Sweden have the best performance. It was determined that India, Pakistan, Mexico, Indonesia, and Bangladesh were the worst performing countries in the last place. On the other hand, in our study, Germany, Canada and Sweden were the countries with the best performance, while Chile and Mexico were among the countries with the worst performance.

In the study of Selamzade and Özdemir (2020) the efficiency level of OECD countries was investigated by Data Envelopment Analysis. In the research, output-oriented Charnes, Cooper and Rhodes (CCR) and Banker, Charnes and Cooper (BCC) methods were used, scale efficiency scores were determined, and improvement suggestions were presented for inefficient countries by estimating the Super efficiency scores of the active countries. Slovakia (CCR) and Iceland (BCC) were identified as the countries with the highest super event scores. It has been determined that Italy, Spain and the USA are in the last place in the efficiency scores. When compared with our research, it was seen that similar results were obtained with Iceland but different with Slovakia.

In their study, Lupu and Tiganasu (2022) examined the health system efficiency of 31 European countries in the COVID-19 epidemic and took six main factors into account when evaluating the efficiency of health systems: health services, health status, population, economic, cultural/social and government-related factors. In the study using the DEA method, three periods of the epidemic (first wave, relaxation period and second wave) were examined. The COVID-19 effectiveness of European countries has been evaluated, from health inputs to health outcomes, and it has been determined that the health system of Western countries was inefficient in the first phase of the epidemic. During the relaxation period and the second wave, it was observed that Western states, which were seriously affected at the beginning of the epidemic, started to take adequate measures and increase the efficiency of their health systems. During this period, Eastern European countries were hit hard due to the inefficiency of their healthcare systems. As a result, based on the study, it has been understood that although the population has a great impact during the epidemic period, the importance of local, regional and national epidemic measures in the spread rate.

Moolla and Hiilamo (2023), who investigate the struggle of countries with high welfare levels with the health system, reveal the relationship between COVID-19 excess death and case fatality rates and the health performance system. It was found that high total and public health expenditures decreased, excess mortality rate and case fatality rate in COVID-19 were observed. The adoption of a national health system has been shown to strengthen overall health financing, knowledge and facilities, reducing deaths from COVID-19. For this reason, suggestions have been made that badly affected countries can improve their health systems by strengthening their public health within the framework of national plans.

The importance of primary health care services in combating the pandemic, controlling the number of cases, and relieving the burden on the health system has been understood. As the OECD (2021b) report draws attention to the magnitude of the impact of the COVID-19 health crisis on health systems. According to the report, strengthening primary health care services plays an important role in the fight against the pandemic. It has been stated that in the early stages of the health crisis, providing primary care to the community and continuity in providing care to individuals with chronic diseases are possible with primary health care services. OECD countries such as France, Iceland, Ireland, Slovenia, Austria, Canada, Australia, the USA, and the UK have a strong, then the line of defense in the fight against the pandemic by reorganizing the delivery of primary health care services. Emphasis was placed on the importance of strong primary health care delivery in reducing the indirect effects of the pandemic and reducing the pressure on health systems. In this context, it was stated that the scope of these services should be expanded and health systems should be strengthened against future public health problems. In our research, Iceland, Austria, Australia, and Canada were identified as the best performing OECD countries in the fight against the COVID-19 pandemic.

In the DKG (2020) report, COVID-19 security assessments of 100 countries were made and according to the results of the study, Switzerland, Germany, Israel, Singapore, Japan, Austria, China, Australia, New Zealand,

South Korea were the safest countries; Many sub-Saharan African countries such as Peru, Indonesia, Cambodia, Paraguay, Bahamas have been identified as the most unsafe countries. Similarly, in our research, where we conducted the COVID-19 security assessment of OECD countries, Germany, New Zealand, South Korea, and Switzerland were identified as the safest countries in the fight against the pandemic.

In the Lowy Institute's (2021) study titled "COVID-19 Performance Index", COVID-19 criteria (confirmed cases per million, deaths, and tests) were used to measure the relative performance of 116 countries against the COVID-19 pandemic. To detect the variation of pandemic management according to different types of states, countries were categorized according to regions, political systems (stay-at-home practices, quarantines, border closures, etc.), population size, and economic development. Using data up to 13 March 2021, countries were compared and ranked. According to the results of the study, countries such as New Zealand, Iceland, Latvia, Australia, and Estonia were the countries that fought the pandemic best, while Mexico, Colombia, Peru, and the USA were found to be the worst-performing countries. In our research, as a result of the COVID-19 security assessment, New Zealand, Australia, Estonia, and Latvia were the best performing countries in the fight against the pandemic; Similarly, Mexico, Colombia, and the USA were found to be the worst-performing countries, taking the last places.

Controlling the spread of the pandemic and applying an effective treatment is another important issue in the fight against the pandemic. In the study conducted by İbrahim et al. (2020), it was aimed to measure the control and treatment effectiveness of the COVID-19 pandemic. In the study, in which the relative effectiveness of the intervention and fight against the COVID-19 pandemic in 58 countries was measured, efficient and inefficient countries were determined by applying the DEA method. According to the results of the study, it was determined that countries such as Austria, China, Denmark, Germany, Ireland, Italy, Singapore, Switzerland, and Turkey showed efficiency in both pandemic control and treatment effectiveness. England, the Netherlands, Belgium, and France were the countries that performed unproductively. It has been reached to the server that preventing the spread of the pandemic is the most important form of defense. As a matter of fact, according to our research results, it has been determined that countries such as Germany, Ireland, Turkey, Austria, Denmark, and Switzerland are efficient in controlling the pandemic and in treatment effectiveness.

As a result of the evaluation of the health system performance of OECD countries in the COVID-19 pandemic, Mexico, Colombia, and Costa Rica were determined as the countries in the last place. The fact that Mexico did not perform well in the fight against the pandemic, one of the evaluation criteria in the decision matrix of the research, has the highest rate of case fatalities compared to other countries, the ratio of fully vaccinated people to the population is low compared to other countries, the share it allocates to health expenditures from GDP is low, and it has a hundred thousand It can be said that reasons such as an insufficient number of intensive care beds per person are effective. In the study of Caldera-Villalobos et al. (2020), few diagnostic tests are applied in Mexico in the fight against the COVID-19 pandemic, the lack of any preparation for the pandemic, the lack of personal protective equipment, the high rate of infected healthcare personnel and the government's lack of security in protecting the healthcare system. It has been concluded that it is not efficient and performs poorly because of this. The reason for Colombia's poor performance in the fight against the COVID-19 pandemic is that it has the lowest number of nurses per thousand people, among the evaluation criteria in the decision matrix, compared to other countries, and the ratio of fully vaccinated people to the population is low compared to other countries. In the study by Shultz et al. (2021), Colombia stopped pandemic measures while the number of cases tended to revive the country's economy enduring the COVID-19 pandemic, the number of symptomatic and asymptomatic cases increased with the application of a high number of diagnostic tests, the delay in the supply of vaccines and the slow distribution of vaccines. More than one factor such as the factors that cause the spread of the pandemic is listed The number of hospital beds per thousand people and the number of intensive care beds per hundred thousand people, are among the evaluation criteria in the decision matrix of the research, are low in Costa Rica compared to other countries. According to the OECD (2021a) report, it was emphasized that Costa Rica's vaccination rate remained low compared to other OECD countries. In this context, it can be deduced that Costa Rica is in the last place in the fight against the COVID-19 pandemic.

The impact of the COVID-19 pandemic on countries varies due to differences in social, cultural, and, public health histories. However, the performance of health systems, quality of health care, and, access to health care can also affect the consequences of the pandemic. The COVID-19 mortality rate is one of the indicators affected by the complex relationship between the quality and access of health systems (Nurchis et al., 2020). Ensuring access to quality health services to prevent premature deaths is among the foremost goals of health systems. The Healthcare

Access and Quality Index (HAQI) is used to evaluate personal health care access and quality (GBD 2016 Healthcare Access and Quality Collaborators, 2018). In this study, while the COVID-19 mortality rate is high in countries with a low HAQI index (Mexico, Colombia, etc.), the mortality rate is low in countries with a high index (Iceland, New Zealand, Denmark, etc.).

It can be said that the health system models and policies adopted by countries are effective in the COVID-19 pandemic. As a matter of fact, according to our research results, it has been seen that countries that adopt the inclusive/holistic health system model perform better in combating the pandemic. Health systems that integrate global public health safety capacities and primary health care services have been effective in reducing the effects of the COVID-19 pandemic. It is predicted that basic health capacities and universal health systems integrated with public health in all countries will be the strongest form of defense against future pandemic threats (Lal et al., 2021).

We stated that the COVID-19 epidemic created a burden on healthcare systems and that countries were having difficulties in the face of this situation. In addition to these difficulties during the epidemic period, the postponement of outpatient diagnosis and treatments increased the workload, caused long waiting times and postponed treatments of patients in the risk group. During the COVID-19 epidemic, which affected people psychologically and economically, mental health services were postponed and difficulties were experienced in accessing health services. According to the OECD (2023) report, with the COVID-19 epidemic, the importance of countries investing in health resources (qualified workforce) to ensure the resilience of their health systems, public health policies to reduce possible risk factors and strategic health plans implemented by governments to improve and strengthen the basic health status of the person has been understood.

According to the research results, the following recommendations can be made in combating the Covid-19 epidemic:

- The COVID-19 pandemic has placed a great burden on countries whose health systems are unprepared and do not have sufficient resources. To alleviate or minimize this burden, health systems can be strengthened by increasing the number of health system resources (physicians, nurses, equipment, etc.).
- Countries that ranked last and performed poorly in the fight against COVID-19 were at a disadvantage due to reasons such as not having sufficient health resources, not taking quarantine measures when the epidemic spread most rapidly, following the wrong treatment method, population density and economic insufficiency. These countries need to direct the health strategies, health policies, diagnosis and treatment methods they implemented in the first phase of the epidemic.
- The COVID-19 epidemic has caused more severe consequences in countries that prefer private health insurance or have to pay out-of-pocket and have limited access to health services. For this reason, it can be recommended that countries that do not have comprehensive health systems should revise their health policies and make improvements to provide equal and equal service to everyone.
- With the COVID-19 epidemic, it has become clear how important the referral chain is in reducing the burden on hospitals. As a matter of fact, there are countries that provide process management by providing treatment at home to the patient, thanks to early diagnosis and intervention in primary care, without creating overcrowding in secondary and tertiary healthcare institutions. Based on this, it is thought that the necessary support should be given to primary health care services.
- Use of masks, social distance practices, hand hygiene, quarantine, etc. to limit the spread of the COVID-19 epidemic. The positive effects of public health measures and related behavioral changes on health have been proven by Japan's successful public health strategy. In order not to violate these measures and behavioral changes, various trainings, seminars or conferences can be given to raise public awareness and emphasize their importance.
- It is known that quarantine practices have a great impact on controlling the pandemic and keeping the number of deaths and cases to a minimum. In the rapidly spreading COVID-19 epidemic, it was observed that countries such as Germany, which started to implement quarantine measures in advance and constantly implemented isolation practices, were successful in combating the epidemic. In this context, it may be recommended that countries determine their strategic pandemic plans against the next pandemic or pandemic threats, taking into account the countries that are effective in practices and sanctions such as quarantine and isolation.

- This research compares the health system performances of OECD countries according to the COVID-19 epidemic and the COVID-19 epidemic safety assessment. A comprehensive and original study that measures the health system performance of countries in the COVID-19 epidemic and evaluates which countries are safe in the COVID-19 epidemic; It will be a guide in this period when the importance of indestructible and irreplaceable health services is understood; It is thought that factors such as early intervention in pandemics, strategic epidemic planning, and preventive health services will be effective in determining the position of countries in the fight against the pandemic and will make a significant contribution to the literature.
- In this study, 38 OECD countries were listed by evaluating the number of cases and deaths due to the COVID-19 epidemic. More comprehensive studies can be conducted using different data.

DECLARATION OF THE AUTHORS

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