

1 **Letter to the Editors**

2 **Effect of coronavirus pandemic on organ donation and transplantation in Turkey**

3 **To the Editor,**

4 In February 2020, the World Health Organization (WHO) announced the name for a disease  
5 caused by the SARS-CoV virus: coronavirus disease 2019 (COVID-19)<sup>1</sup>. On March 11, 2020,  
6 the first case was officially confirmed in Turkey<sup>2</sup>, and the WHO declared COVID-19 a  
7 pandemic<sup>3</sup>.

8 The COVID-19 pandemic has affected all aspects of the healthcare system, including life-  
9 saving procedures such as organ transplantation and donation. During the pandemic, it is  
10 difficult to manage patients with end-stage organ failure for whom temporary treatment is not  
11 available. There are concerns that transplant recipients may be more susceptible to infection,  
12 there may be difficulties in providing virus-free areas for them, hospitals may not have  
13 sufficient resources for transplants, and there is difficulty finding suitable organ donors [1].  
14 Therefore, transplant centers have prioritized emergency and severe transplant procedures.  
15 More than 25,000 people in Turkey are currently on the waiting list for an organ transplant<sup>4</sup>.  
16 We report the total number of solid organ transplantations (SOT) and donations performed in  
17 Turkey between January 2008 and December 2020. The data were obtained from the database  
18 of the Organ Tissue Transplantation and Dialysis Services Department with their permission.

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<sup>1</sup> World Health Organisation (2020). WHO | Pneumonia of unknown cause – China [online]. Website <https://www.who.int/csr/don/05-january-2020-pneumonia-of-unknown-cause-china/en/> [accessed 22 March 2021]

<sup>2</sup> Republic of Turkey Ministry of Health (2020) COVID-19 Information Page [online]. Website <https://covid19.saglik.gov.tr/> [Accessed: 22 March 2021].

<sup>3</sup> World Health Organisation (2020). WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020 [online] Website <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020> [accessed: 22 March 2021]

<sup>4</sup> Sağlık Hizmetleri Genel Müdürlüğü. Doku, Organ Nakli ve Diyaliz Hizmetleri Dairesi Başkanlığı [online]. Website [https://organkds.saglik.gov.tr/dss/PUBLIC/Transplant\\_Solid\\_Organ.aspx](https://organkds.saglik.gov.tr/dss/PUBLIC/Transplant_Solid_Organ.aspx) [accessed April 2021]

1 In Turkey, although solid organ transplantation has been increasing in recent years, there was a  
2 33% in the number of transplanted organs in 2020, when the COVID-19 pandemic started. This  
3 reduction was particularly noticeable in April. After March 2020, when restrictions were at the  
4 highest level <sup>5</sup> and the vast majority of health resources were allocated to fight the pandemic,  
5 organ transplantation operations were reduced to a minimum. The decrease in solid organ  
6 transplants performed on patients under 18 years of age was found to be 30%, similar to adults  
7 (33%). The total number of solid organ transplants and deceased organ donors by years is shown  
8 in Figure 1.

9 The kidney is the most transplanted organ in Turkey<sup>4</sup>. Although the number of kidney  
10 transplants has decreased the most among other organ transplants, kidney transplantation is the  
11 most performed organ transplantation during the pandemic period for all ages. The reason for  
12 the higher reduction in kidney transplantation may be the consideration of alternative therapies  
13 such as dialysis. Besides kidney transplants, a significant negative effect was also seen in heart,  
14 lung, and liver transplantation procedures. All of these are important organs in survival  
15 probability. The number of solid organ transplants and the number of organ donation types in  
16 the last two years are shown in Table.

17 In 2020, a decrease in brain death cases was 41%. Patients diagnosed with brain death are  
18 potential organ donors. Live donor organ transplants may be postponed to a safer date in the  
19 future. However, the deceased donor organs must be obtained immediately or they will be  
20 wasted. During the pandemic in Turkey, deceased donor transplantation and living donor  
21 transplantation decreased 70% and 21%, respectively. Restrictions in social areas due to the  
22 pandemic and changes in the cause of death, particularly reductions in the number of motor

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<sup>5</sup> Republic of Turkey Ministry of Health (2020) COVID-19 Information Page [online]. Website  
<https://covid19.saglik.gov.tr/TR-66211/tc-saglik-bakanliginin-covid-19-ile-ilgili-aldigi-onlemler-nelerdir.html>  
[22 March 2021].

1 vehicle accidents<sup>6</sup> [7], which usually give the most suitable donors, have reduced the overall  
2 donor pool and limited organ availability. The number of brain death and families allowing  
3 organ donation by years is shown in Figure 2.

4 Several factors have been suggested that may contribute to the reduction of organ donation and  
5 transplantation procedures during the outbreak. Occupancy in hospitals, overwhelmed  
6 healthcare systems, the high risk of infection in immunocompromised patients, the risk of  
7 transmission in healthcare workers, reduced availability of healthcare workers for patients  
8 without COVID-19 and uncertainty of treatment algorithms, decreased potential organ donors  
9 due to fewer traffic accidents, and needing more time for testing potential donors may lead to a  
10 reduction in solid organ transplantation and donation [1-4].

11 In conclusion, the COVID-19 pandemic has serious effects on all types of organ donation and  
12 transplantation. The number of donors and transplants has decreased significantly during the  
13 COVID-19 pandemic, especially in kidney transplantation. Hopefully, the availability of the  
14 necessary resources is improved and maximized to ensure that patients with end-stage organ  
15 failure continue to receive timely and safe organ transplantation.

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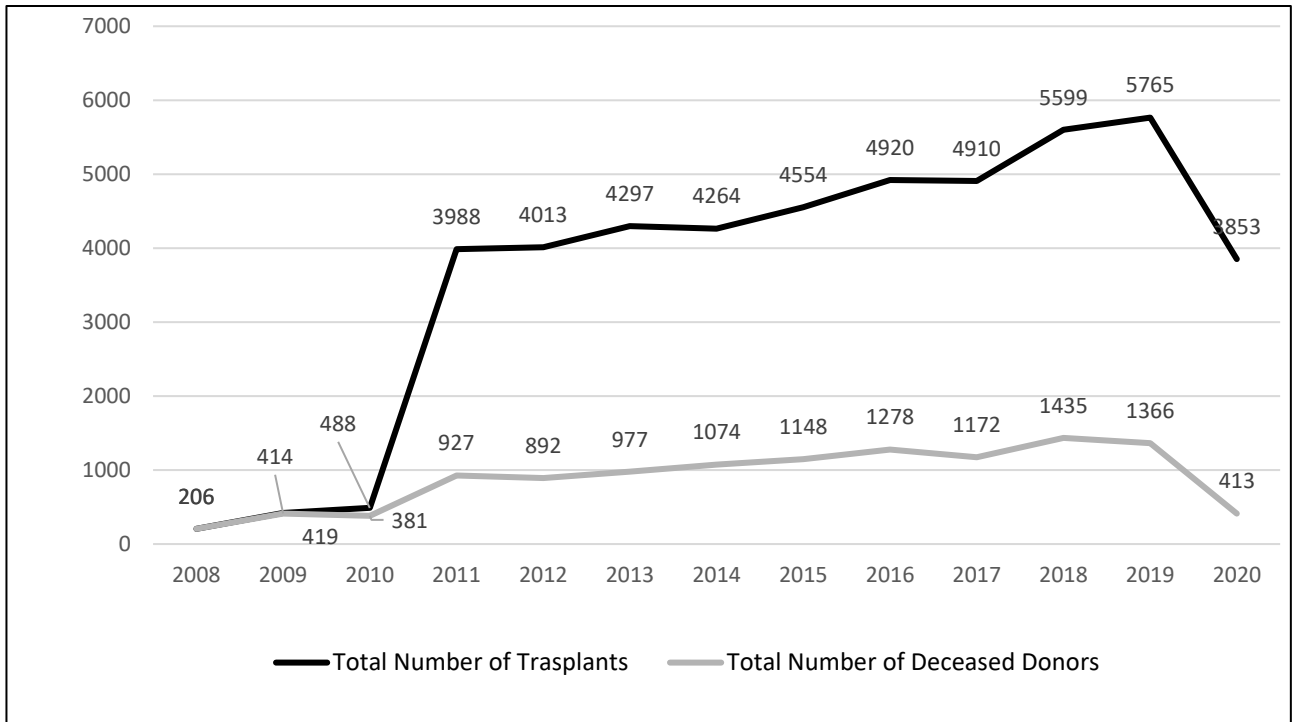
<sup>6</sup> Emniyet Genel Müdürlüğü Trafik Hizmetleri Başkanlığı (2021). Ülke Geneli Trafik İstatistik Bülteni [online].  
Website [www.trafik.gov.tr](http://www.trafik.gov.tr) [accessed April 10 2021].

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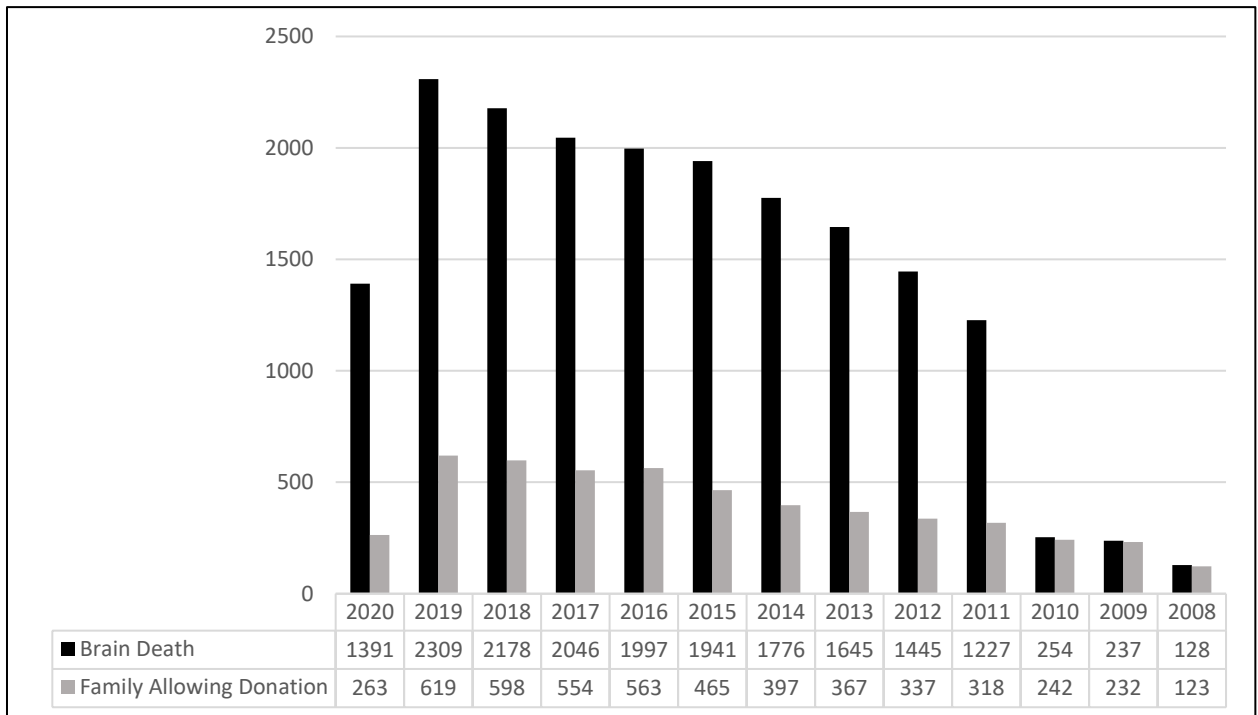
1 Table. Number of solid organ transplants from deceased and live organ donors

Types of Solid Organ Transplants	2020			2019			
	Percentage Decline of Total Transplants	Types of Donors Living	Deceased	Total	Types of Donors Living	Deceased	Total
Lung	66%	-	11	11	-	33	33
Kidney	35.3%	2249	249	2,498	3055	808	3863
Small Intestine	50%	-	2	2	-	4	4
Heart	75%	-	21	21	-	84	84
Liver	25.6%	1191	129	1,320	1344	432	1176
Pancreas	66%	-	1	1	-	3	3
Total	33%	3440	413	3,853	4399	1366	5765



1 Figure 1. Total number of solid organ transplantation and deceased donors by years

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3 Figure 2. Number of brain death and number of families allowing organ donation