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Based on Foreign Trade Volume and Legal Status

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Determining the Relationships between Newly Established Logistics Enterprises in Turkey Based on Foreign Trade Volume and Legal Status

(Türkiye’de Yeni Kurulan Lojistik İşletmelerinin Dış Ticaret Hacmi ve Hukuki Durumuna Göre İşletmeler Arasındaki İlişkilerin Belirlenmesi)

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Abstract

The purpose of this study is to determine how newly established logistics businesses (NELB) in Turkey affect foreign trade volume. Additionally, it aims to identify the relationships between NELB and businesses based on their legal status. The data used in this research, covering the years 2013-2021, were gathered from the open-access sites of the Turkish Statistical Institute (TUIK). IBM SPSS Statistics 20 software was used to analyze the data. The Pearson Correlation analysis method was chosen to evaluate the relationships between variables. According to the analysis results, NELB has a strong positive effect on Turkey's foreign trade volume (Sig. (2-tailed) = 0.03 and Pearson Correlation = 0.857**). Additionally, there is a strong positive relationship between NELB and businesses categorized as "real person" (Sig. (2-tailed) = 0.01 and Pearson Correlation = 0.887**) and "limited company" (Sig. (2-tailed) = 0.016 and Pearson Correlation = 0.767**), based on their legal status. However, no relationship was found between businesses with legal statuses such as ordinary partnership, joint-stock company, cooperative, and other types.

Öz

Bu çalışmanın amacı; Türkiye’de yeni kurulan lojistik işletmelerinin (YKLİ) ne oranda dış ticaret hacmini etkilediğini tespit etmektir. Ayrıca, YKLİ ile hukuki durumlarına göre işletmeler arasındaki ilişkileri belirlemektir. Araştırmada kullanılan 2013-2021 yılları arasındaki veriler, Türkiye İstatistik Kurumu (TÜİK) açık erişim sitelerinden derlenmiştir. Verilerin analizi için IBM SPSS Statistics 20 paket programı kullanılmıştır. Veriler arasındaki ilişki durumlarını değerlendirmek için Pearson Korelasyon analiz yöntemi tercih edilmiştir. Bazı analiz sonuçlarına göre; Türkiye’de YKLİ dış ticaret hacmini pozitif yönde güçlü bir şekilde (Sig. (2-tailed)= 0,03 ve Pearson Correlation= 0,857**) etkilemektedir. Ayrıca, YKLİ ile hukuki durumlarına göre işletmelerden “gerçek kişi” (Sig. (2-tailed)= 0,01 ve Pearson Correlation= 0,887**) ve “limited şirketi” (Sig. (2-tailed)= 0,016 ve Pearson Correlation= 0,767**) arasında pozitif yönlü güçlü ilişki bulunmaktadır. Fakat, adi ortaklık, anonim şirketi, kooperatif ve diğer hukuki durumlarına göre işletmeler arasında herhangi bir ilişkiye rastlanamamıştır.

Keywords:

Logistics
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Introduction

Logistics is one of the indispensable components of foreign trade. It is used in the transportation of imported or exported products from one country to another. Businesses prefer the most appropriate transport modes to minimize total logistics costs, ensure product safety, and meet customer demands on time (Ağgön, 2019).

The development of international logistics and trade enhances the economies of countries and increases the welfare of people. With the development of exports, more foreign exchange enters the country, increasing the value of the country's currency and people's purchasing power. Products not available domestically are imported from other countries, ensuring access to these products (Oda, 2008).

According to the World Trade Organization, foreign trade worldwide has declined during economic crises, wartimes, and the COVID-19 pandemic. The most significant decrease in foreign trade began at the end of 2019 with the onset of the COVID-19 pandemic. The impact of the pandemic continued until the first quarter of 2021, with recovery starting in the following periods. The foreign trade volume decreased by 2.4% in the fourth quarter of 2022 compared to the previous quarter (Q3 2022) and by 0.8% compared to the fourth quarter of the previous year (2021). The main reasons for the decrease in foreign trade volume include high inflation in countries, tight monetary policies, and conflicts between nations. Although an increase in international maritime traffic has been observed in China since December 2022, there has been a slowdown in maritime traffic in Europe. This situation caused foreign trade to remain stagnant in the first quarter of 2023. However, a growth of 1.7% in world merchandise trade is expected in the second quarter of 2023 (WTO, 2023). When examining Turkey's foreign trade volume from 2013 to 2023, a decrease was observed from 2013 to 2016, followed by an increase until 2019. However, there was a decrease in 2019 and 2020 (during the COVID-19 pandemic). In January 2022, there was a 17.2% increase in exports and a 54.2% increase in imports compared to January of the previous year (TÜİK, 2023).

Although many studies focus on foreign trade and logistics, some notable studies include: Wang and Wu (2022), who studied the development of coastal port logistics in international trade and found that high levels of coordination in coastal ports positively affect international trade. Salawu et al. (2022) examined the effects of trade logistics on international trade, noting a strong link between international trade and logistics, and identifying areas needing further development. Zhan and Wang (2018) researched the effects of logistics supply on international trade in Sichuan Province, China, finding that while logistics supplies impact foreign trade, they are less effective than logistics demands. Korkut et al. (2020) investigated the relationships between international logistics and foreign trade in 20 developed countries, stating that logistics infrastructures and international trade move together in the long term. Kışman and Aydın (2020) explored Turkey's and Europe's roles in international trade and logistics, highlighting the growing importance of the logistics sector in the international arena and the increasing emphasis businesses place on it. Ateş and Işık (2010) studied the effects of the logistics sector on export growth in Turkey, identifying a long-term relationship despite the absence of a short-term relationship.

Generally, literature studies focus on the effects of logistics performance or activities on foreign trade. However, no study has explored the impact of newly established (newly formed) businesses in transportation and storage on foreign trade. To fill this gap in the literature, this study aims to determine whether newly established logistics businesses in Turkey primarily operate domestically or internationally. Additionally, it seeks to provide information for decision-makers (businesses, investors, public authorities, etc.) by determining Turkey's demand trends with percentage effect rates and to identify the relationships between newly established logistics businesses and other businesses based on their legal status.

1. Literature Review

The literature review on the effects of logistics activities on foreign trade and the country's economy is given in Table 1. Information on the publication subject of academic studies, authors, scientific methods used and research results is provided below.

Table 1. Literature Review on the Effects of Logistics Activities on Foreign Trade and Economy

Publication Subject	Author(s)	Method	Result
Effects of logistics performance on business and export performance in Konya province	Balta and Cura (2022)	Pearson correlation analysis	They determined that logistics performance affects business and export performance.
Economic effects of logistics activities in Mediterranean countries	Güngör, et al. (2019)	Pearson correlation analysis	Logistics activities significantly affect the country's economic size.
Effects of logistics supply on international trade in Sichuan province in China	Zhan and Wang (2018)	VAR model	It was determined that logistics supplies have effects on foreign trade.
Relationships between international logistics and foreign trade in developed 20 countries	Korkut, et al. (2020)	Panel causality	They determined that logistics infrastructures and international trade act together in the long term.
The place of Turkey and Europe in international trade logistics	Kışman and Aydın (2020)	Literature review	The importance that businesses attach to logistics is increasing
The effects of the logistics sector in Turkey on export growth	Ateş and Işık (2010)	Granger causality	While a short-term relationship cannot be established between the logistics sector and export, a long-term relationship was determined.
The effects of air logistics in Shanghai on international trade The role of foreign trade in the development of the logistics sector in Turkey	Zhu and Yang (2011)	Cointegration and Granger causality	It was determined that infrastructure development and educated personnel are needed for the development of international trade in Shanghai.
The role of foreign trade in the development of the logistics sector in Turkey	Tunç and Kaya (2016)	Causality Analysis	It was determined that the transportation volume and foreign trade volume in Turkey are co-integrated.

Foreign trade relations of logistics and transportation expenditures in Turkey	Incekara, (2020)	Granger Causality Tests with Toda and Yamamoto	A two-way relationship was determined between logistics and transportation expenditures and foreign trade.
Impact of coastal port logistics on international trade	Wang and Wu (2022)	Entropy weight method	They determined that the high level of coordination in coastal ports positively affects international trade.
Impacts of trade logistics on international trade	Salawu et al. (2022)	Literature review	They found a strong connection between international trade and logistics.

2. Turkey's Foreign Trade Volume and Legal Status

In this section, the distribution of Turkey's foreign trade volume and newly established enterprises is presented below.

2.1. Foreign Trade in Turkey in Recent Years

Information on changes in foreign trade in Turkey is shown in Table 2. Accordingly, in 2023, exports were 180 billion 832 million dollars, while imports were 210 billion 345 million dollars. In 2022, exports were 254 billion 169 million dollars, while imports were 363 billion 710 million dollars.

Table 2. Foreign Trade in Turkey in Recent Years

Years	Export	Import	Difference	% Change
2019	180 832 722	210 345 203	- 29 512 481	-16,32
2020	169 637 755	219 516 807	- 49 879 052	-29,40
2021	225 214 458	271 425 553	- 46 211 095	-20,52
2022	254 169 748	363 710 575	- 109 540 827	-43,10
2023	255 627 429	361 966 913	- 106 339 484	-41,60

Source: Derived from TÜİK (2024) data.

Turkey's exports were 225 billion 214 million dollars in 2021, 169 billion 637 million dollars in 2020, and 180 billion 832 million dollars in 2019. When looking at import data, they were 271 billion 425 million dollars in 2021, 219 billion 519 million dollars in 2020, and 210 billion 345 million dollars in 2019. According to these data, the difference between exports and imports in 2019 was an import surplus of 29 billion 513 million dollars, while in 2020 it was 49 billion 882 million dollars, in 2021 it was 46 billion 211 million dollars, in 2022 it was 109 billion 541 million dollars, and in 2023 it was 105 billion 997 million dollars (TÜİK, 2024). It is evident that the import surplus in 2022 and 2023 is more than twice as much compared to previous years, thus exacerbating the current deficit. It is also observed that the rate of change between exports and imports has been continuously increasing from 2019 to 2023, with the exception of 2021.

2.2. Processing According To Turkey's Foreign Trade Volume And Legal Status

Turkey's foreign trade volume over the years and the status of newly established logistics companies are shown in Figure 1. According to the data, Turkey's foreign trade volume was \$422,303,718 thousand USD in 2013 but decreased to \$351,436,241

thousand USD in 2016. Although there was a slight increase until 2018, it decreased again to \$389,154,562 thousand USD between 2019 and 2020. However, the foreign trade volume increased once more in 2021.

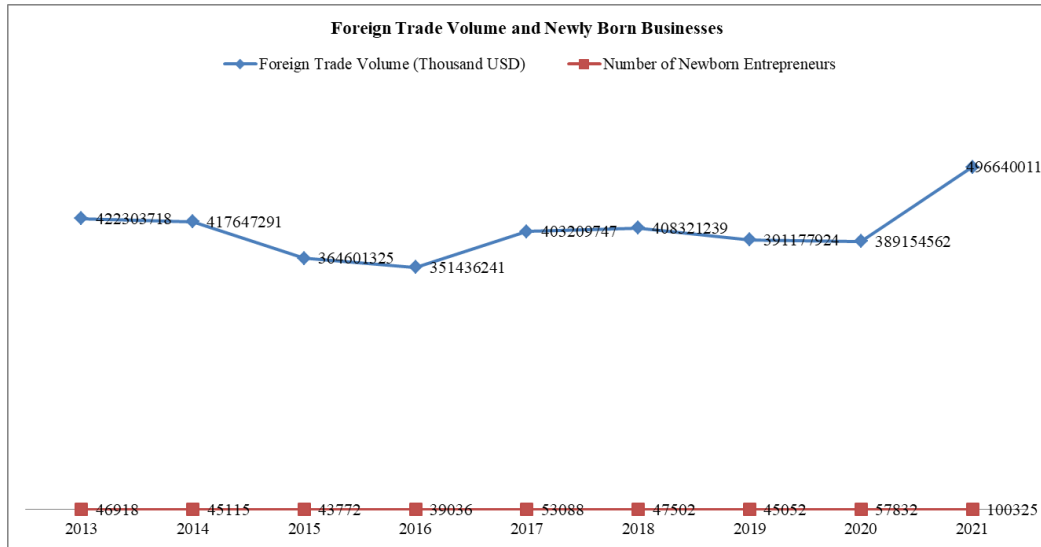


Figure 1. Turkey's Foreign Trade Volume and Number of Newly Established Logistics Enterprises by Year

Source: Derived from TÜİK (2023) data.

When examining the number of newly established logistics businesses, it was 46,918 in 2013. Over the years, this number decreased, reaching 39,036 in 2016. Although there was a slight increase from 2017 onwards, a decrease occurred in 2019. However, in 2021, immediately following the COVID-19 pandemic, the number of newly established logistics businesses increased nearly two-fold compared to the previous year.

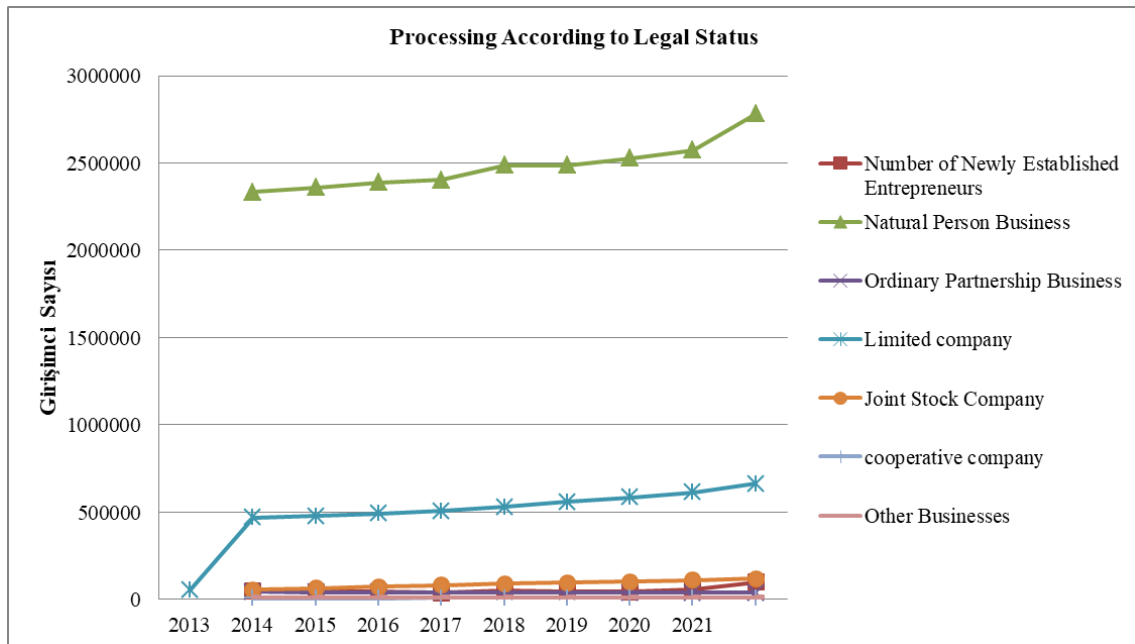


Figure 2. Number of Businesses in Turkey According to Their Legal Status by Year

Source: Derived from TÜİK (2023) data.

The number of businesses in Turkey according to their legal status over the years is shown in Figure 2. Accordingly, individual businesses represent the highest number by legal status. These types of businesses have continuously increased over the years without experiencing a decrease. Limited companies (Ltd. Şti.) are in second place and show a continuous upward trend. Joint stock companies, in third place, have also been increasing over the years. Cooperative businesses have not seen a decrease over time; rather, they have grown. However, ordinary partnership businesses have continuously declined from 2013 to 2020, although a slight recovery is observed in 2021. Other businesses experienced a continuous increase from 2013 to 2018, a decline during the COVID-19 pandemic (2019 and 2020), and an increase in 2021.

3. Research Methodology

This study determines the relationships between Turkey's foreign trade volume and newly established logistics enterprises, as well as enterprises according to their legal status. The main purpose of the research is to investigate the impact of newly established logistics enterprises on Turkey's foreign trade volume and, if so, to determine the level of this impact. Additionally, the study examines the effect of enterprises on Turkey's foreign trade volume according to their legal status. Therefore, the following questions are addressed in this study. The first question is: Do newly established logistics companies affect Turkey's foreign trade volume? If so, what is the rate of impact? The second question is: Is there a relationship between newly established logistics companies and businesses according to their legal status? If so, what are the rates? The third question is: Which businesses, according to their legal status, affect Turkey's foreign trade, and what are their rates of impact? The results of the following hypotheses were investigated to answer these questions.

H₁: There is a statistically significant relationship between newly established logistics companies and Turkey's foreign trade volume.

H₂: There is a statistically significant relationship between newly established logistics companies and companies according to legal status.

H₃: There is a statistically significant relationship between Turkey's foreign trade volume and companies according to legal status.

Data from the years 2013-2021 used in the research were compiled from the open access sites of the Turkish Statistical Institute (TUIK). The sample of the study consists of annual data from 2013 to 2021. Data after 2021 were excluded to avoid potential distortions caused by the effects of the COVID-19 outbreak, which could negatively impact the study's results. Additionally, data prior to 2013 were not included as they were inaccessible. Therefore, the study focuses on the period from 2013 to 2021. In investigating the factors affecting Turkey's foreign trade volume, the selection of variables was based on legal enterprises in Turkey and foreign trade volume data. To determine whether the data was normally distributed, skewness and kurtosis values were examined. If these values fall within the range of ± 2 , it indicates that the data is normally distributed (Balta and Cura, 2022). Pearson Correlation analysis method was used to determine the strength and relationships between the data depending on the

temporal distribution of the data. IBM SPSS Statistics 20 software was used for data analysis.

4. Findings of the Study

The descriptive statistics of the data used in the study are presented in Table 3. According to the data, there are no missing values. The highest standard deviation is observed in the foreign trade volume, while the lowest standard deviation is seen in other businesses. The variation in standard deviation may be associated with the data's variability over the years and the range of the data. Examination of the skewness and kurtosis values indicates that the data is normally distributed. Additionally, the table provides the average, minimum, and maximum values of the data.

Table 3. Descriptive Statistics Values of the Data Used in the Research

		Foreign Trade Volume (Thousand USD)	Number of Newly Established Logistics Businesses	Individual Business	Ordinary Partnership Business	Ltd. Co.	Joint-Stock Company	Cooperative	Other Businesses
N	Valid	9	9	9	9	9	9	9	9
	Missing	0	0	0	0	0	0	0	0
Std. Deviation		4,2E+07	1,8E+04	1,4E+05	1,8E+03	6,6E+04	2,1E+04	1,1E+03	4,9E+02
Variance		1,7E+15	3,4E+08	1,9E+10	3,4E+06	4,4E+09	4,4E+08	1,1E+06	2,4E+05
Skewness		1,238	2,535	1,319	-,212	,650	-,173	-,712	,128
Std. Error of Skewness		,717	,717	,717	,717	,717	,717	,717	,717
Kurtosis		2,773	6,881	2,114	-,723	-,608	-1,174	-1,609	-,478
Std. Error of Kurtosis		1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Range		145203770	61289	448215	5743	193900	61290	2664	1539
Minimum		351436241	39036	2334963	37669	469879	57187	8003	12218
Maximum		496640011	100325	2783178	43412	663779	118477	10667	13757

The results of Pearson Correlation analyses examining the relationships between Turkey's foreign trade volume and newly established logistics enterprises, as well as enterprises according to their legal structures, are provided in Table 4. The analysis reveals a strong positive relationship between newly established logistics enterprises and foreign trade volume data (Sig. (2-tailed) = 0.003 and Pearson Correlation = 0.857**). The significance value of 0.003 indicates that the strength of the relationship is 85.7% with a 1% margin of error. A relationship of 88.7% was found between newly established logistics enterprises and individual businesses, and a strong positive relationship of 76.7% was observed between newly established logistics enterprises and limited companies.

Table 4. Correlation Relationships Between Turkey's Foreign Trade Volume

Businesses by Legal Status		Correlations				
		Foreign Trade Volume (Thousand USD)	Newly Established Logistics Business	Individual Business	Ordinary Partnership Business	Ltd. Co.
Foreign Trade Volume (Thousand USD)	Pearson Correlation	1	0.857**	0.641	-0.153	0.512
	Sig. (2-tailed)		0.003	0.063	0.694	0.159
	N	9	9	9	9	9
Newly Established Logistics Business	Pearson Correlation		1	0.887**	-0.433	0.767*
	Sig. (2-tailed)			0.001	0.244	0.016
	N			9	9	9
Individual Business	Pearson Correlation			1	-0.764*	0.968**
	Sig. (2-tailed)				0.017	0
	N				9	9
Ordinary Partnership Business	Pearson Correlation				1	-0.881**
	Sig. (2-tailed)					0.002
	N					9
Ltd. Co.	Pearson Correlation					1
	Sig. (2-tailed)					
	N					
Joint Stock Company	Pearson Correlation					
	Sig. (2-tailed)					
	N					
Cooperative	Pearson Correlation					
	Sig. (2-tailed)					
	N					

** . Correlation is significant at the 0.01 level (2-tailed). * . Correlation is significant at the 0.05 level (2-tailed).

There are positive and strong relationships between individual businesses and joint stock companies as well as cooperative businesses, whereas there are negative relationships with ordinary partnership businesses. Negative relationships have been observed between ordinary partnership businesses and limited companies, joint stock companies, and cooperative businesses. Positive and strong relationships exist between limited companies and joint stock companies as well as cooperative businesses. A 94.1% positive and strong relationship was found between joint stock companies and cooperative businesses, while no relationships were identified between other types of businesses. Similarly, no relationship was found between cooperative businesses and other types of businesses.

5. Conclusion

Foreign trade and logistics are interconnected activities that significantly impact the economies, development, and welfare levels of countries. This study explores the effects of newly established logistics companies on the development of foreign trade in Turkey. No similar study has been found previously. This study determined whether newly established logistics companies have more impact in the domestic market or internationally. Additionally, it seeks to identify the relationships between newly established logistics companies and other companies based on their legal status.

Although Turkey's foreign trade volume has decreased in some years, it generally shows an upward trend when measured in USD. This trend appears positive for Turkey. However, according to TÜİK reports, per capita income in USD has declined from 2013 to 2022, indicating that population growth is outpacing the growth in foreign trade volume. To enhance welfare levels in Turkey, it is essential to increase exports through higher production. Moreover, it is noted that there are more individual businesses in Turkey compared to other business types according to their legal status.

According to the results in Table 3, the research hypotheses are as follows. There is a statistically significant relationship between newly established logistics companies and Turkey's foreign trade volume, with a Sig. (2-tailed) value of 0.003 and a Pearson Correlation of 0.857**. In this case, the H1 hypothesis is accepted. A 1-unit increase in newly established logistics companies corresponds to a 0.857-unit increase in foreign trade volume. There is a significant relationship between newly established logistics companies and businesses based on legal status, but only for individual companies (Pearson Correlation 0.887** and Sig. (2-tailed) 0.001) and Ltd. Şti companies (Pearson Correlation 0.767* and Sig. (2-tailed) 0.016). As the Sig. (2-tailed) values for other companies by legal status are greater than 0.05, the H2 hypothesis is rejected, indicating no significant relationship between the variables. Similarly, since the Sig. (2-tailed) values for companies by legal status and Turkey's foreign trade volume are also greater than 0.05, the H3 hypothesis is rejected, and no significant relationship is found between these variables.

Studies by Balta and Cura (2022) and Zhan and Wang (2018) found that logistics activities positively impacted the development of foreign trade. Similarly, Emirkadı and Balcı (2018) highlighted that advancements in Turkey's logistics sector had a positive effect on foreign trade. Daşkan (2016) also noted that improvements in the logistics sector significantly influenced Turkey's foreign trade. This study produced results consistent with the existing literature. However, unlike previous studies, this research specifically focused on newly established logistics enterprises, finding that these companies contributed more to the development of foreign trade than to the domestic market.

The data used in this study, spanning from 2013 to 2021, constitutes a limitation due to the difficulty and time required to access all relevant data. Future research could explore the relationships between newly established logistics companies and industrial production.

It is evident that newly established logistics companies in Turkey have a greater impact on foreign trade compared to the domestic market. New investments in this sector contribute to increased foreign trade. Therefore, encouraging and supporting these companies is crucial for further developing exports.

Contribution Rate and Conflict of Interest Statement

All stages of the study were designed by the author(s) and contributed equally. There is no conflict of interest in this article.

Ethics Statement and Financial Support

Ethics committee principles were followed in the study. Ethics Committee Report is not required in the study. There has been no situation requiring permission within the framework of intellectual property and copyrights.

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