

Effect of COVID-19 pandemic on cigarette sales: The case of Türkiye

COVID-19 pandemisinin sigara satışları üzerindeki etkisi: Türkiye örneği

Ahmad Abed Ahmadi¹, Mehmet Akif Erdöl², Ahu Pakdemirli³, Esra Şafak Yılmaz⁴,
Connie Hoe⁵, Kevin Welding⁵, Toker Ergüder¹, Cevdet Erdöl⁶

¹Department of Public Health, Faculty of Medicine, University of Health Sciences, Ankara, Türkiye

²Department of Cardiology, Bilkent City Hospital, Health Sciences University, Ankara, Türkiye

³Department of Physiology, Faculty of Medicine, University of Health Sciences, Ankara, Türkiye

⁴Department of Medical Informatics, Faculty of Medicine, University of Health Sciences, Ankara, Türkiye

⁵Institute for Global Tobacco Control (IGTC), Department of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, USA

⁶University of Health Sciences, Ankara, Türkiye

ABSTRACT

Background: Considering the extraordinary situation of COVID-19, Türkiye government alongside with civil organizations used this opportunity to inform people about harmful effects of smoking during pandemic period and to encourage them for cessation. Accordingly, the primary aim of this paper is to compare cigarette sales data pre- and post- COVID-19 pandemic in Türkiye.

Methods: The cigarette sales in January – June 2020 were compared with the same months in 2019. Permutation Wilcoxon Signed-Rank Test was used for data analysis. A 6-month prediction was made for the remaining months in 2020 using the Box Jenkins ARIMA (Auto Regressive Integrated Moving Average) time series model. The monthly cigarette sales were graphed against the expected monthly cigarette sales (average cigarette sales in 2019) to determine pattern pre- and post-COVID-19.

Results: There was a significant decrease in manufactured cigarette sales in January – June 2020 comparing with the same months in 2019. The cigarette sales in February – May 2020 were below the expected monthly cigarette sales. If this trend continues, cigarette sales will drop to 10,002,121,177 sticks/month by the end of 2020.

Conclusions: Governments and organizations should use this pandemic period to strengthen the implementation of existing tobacco control policies and increase smoking cessation campaigns.

Keywords: COVID-19, smoking, pandemics, tobacco control

✉ Ahmad Abed Ahmadi ▪ abed.ahmad79@yahoo.com

Received / Geliş tarihi: 12.03.2025 **Accepted / Kabul tarihi:** 27.04.2025 **Published / Yayın tarihi:** 30.04.2025

Copyright © 2025 The Author(s). Published by The Society for Health Promotion and Tobacco Control. This is an open access article distributed under the [Creative Commons Attribution License \(CC BY\)](#), which permits unrestricted use, distribution, and reproduction in any medium or format, provided the original work is properly cited.

Telif hakkı © 2025 Yazar(lar). Sağlık Geliştirme ve Sigara ile Mücadele Derneği tarafından yayımlandı. Açık erişimli bu makale, orijinal çalışmaya uygun şekilde atıfta bulunulması koşuluyla, herhangi bir ortamda veya formatta sınırsız kullanım, dağıtım ve çoğaltmaya izin veren [Creative Commons Atıf Lisansı \(CC BY\)](#) ile dağıtılmıştır.

Öz

Arka Plan: COVID-19'un olağanüstü koşulları, Türkiye hükümetinin ve sivil toplum kuruluşlarının, bu durumu insanların pandemi döneminde sigaranın zararları hakkında bilgilendirmek ve bırakmaları konusunda teşvik etmek amacıyla değerlendirmesine olanak sağlamıştır. Bu çalışmanın temel amacı, Türkiye'de COVID-19 pandemisi öncesi ve sonrası sigara satış verilerini karşılaştırmaktır.

Yöntemler: 2020 yılı Ocak – Haziran ayları arasındaki sigara satışları, 2019'un aynı dönemindeki verilerle karşılaştırılmıştır. Veri analizi için Permütasyon Wilcoxon İşaretli Sıra Testi kullanılmıştır. 2020 yılının kalan ayları için Box Jenkins ARIMA (Otomatik Regresif Entegre Hareketli Ortalama) zaman serisi modeli kullanılarak 6 aylık bir tahmin yapılmıştır. Aylık sigara satışları, COVID-19 öncesi ve sonrası düzeni belirlemek amacıyla, 2019'daki ortalama sigara satışları ile birlikte grafikler halinde sunulmuştur.

Bulgular: 2020 yılı Ocak – Haziran döneminde, 2019'un aynı aylarıyla karşılaştırıldığında üretilen sigara satışlarında belirgin bir düşüş gözlemlenmiştir. 2020 yılı Şubat – Mayıs aylarında sigara satışları, beklenen aylık satışların altında kalmıştır. Eğer bu trend devam ederse, 2020 yılı sonunda sigara satışlarının ayda 10.002.121.177 dalga düşmesi beklenmektedir.

Sonuçlar: Hükümetler ve kuruluşlar, mevcut tütün kontrol politikalarının etkinliğini artırmak ve sigara bırakma kampanyalarını desteklemek için bu pandemi döneminden yararlanmalıdır.

Anahtar kelimeler: COVID-19, sigara içimi, pandemiler, tütün kontrolü

Introduction

Coronavirus disease (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was initially identified in December 2019 in Wuhan, China then quickly spread across the world. This outbreak was declared as a public health emergency of international concern on January 30, 2020 by the World Health Organization (WHO).¹

In order to prepare for and effectively respond to this pandemic, the Ministry of Health (MoH) of Türkiye formed a COVID-19 Scientific Advisory Board (CSAB) on January 10, 2020, two-months prior to the identification of the first COVID-19 case. Guidelines for health professionals as well as all additional relevant materials were published and made available on MoH's website.² Once the first confirmed case of COVID-19 disease was identified on March 11, 2020,³ the government also took steps to close non-essential businesses including cafes, bars, restaurants and night clubs, prohibit mass gatherings and limit movement, as well as, use of public places.² As of June 1, 2020,

the total number of COVID-19 cases reported in Türkiye was 164,769, the total number of deaths reported was 4,563 and the overall case fatality rate was 2.8 % with 128,947 patients cured.⁴

Tobacco smoking is recognized as a key risk factor for many respiratory infections and increases the severity of respiratory diseases. While evidence on whether current tobacco smokers are at increased risk of disease, morbidity and mortality from COVID-19 are limited, recent studies have shown a likely association between smoking and COVID-19. A study that aimed to investigate the factors affecting the progression of pneumonia in COVID-19 patients in three tertiary hospitals in Wuhan suggested that smoking is associated with disease progression.⁵ A systematic review of five studies on COVID-19 that included information on patients' smoking status indicated that smokers compared to no-smokers were 1.4 times more likely (RR=1.4, 95% CI: 0.98–2.00) to endure severe symptoms of COVID-19, and about 2.4 times more likely to be admitted to an intensive care unit (ICU), require mechanical ventilation or die (RR=2.4, 95% CI: 1.43–4.04).⁶ Another study assessing the

clinical characteristics of COVID-19 in a select cohort of patients throughout China showed that a higher percentage of current and former smokers were considered severe cases as compared to nonsmokers.⁷ Smoking has also been found to be associated with increased development of acute respiratory distress syndrome which is one of the key complications for severe COVID-19 cases.^{8,9}

Furthermore, smokers are likely more at risk of contracting COVID-19 as smoking requires the contact between possibly contaminated fingers and/or cigarettes with the mouth, thereby increasing the possibility of the transmission of COVID-19.¹⁰ Smoking is also one of the main risk factors for non-communicable diseases such as cardiovascular diseases and cancer which makes COVID-19 patients more vulnerable for severe disease.¹¹ Studies from other outbreaks caused by viruses from the same family as COVID-19, such as Middle East respiratory syndrome (MERS) for example, also suggest the likely association between tobacco smoking and increased risk of infection, poor prognosis and/or mortality for infectious respiratory diseases.^{12,13}

In Türkiye, tobacco use is a pressing public health concern. According to available data from the 2016 Global Adult Tobacco Survey (GATS), 31.6% (19.2 million) of the population were current tobacco smokers (44.1% of men, 19.2% of women). Those who smoked tobacco on a daily basis were found to smoke an average of 18.0 cigarettes per day (18.9 among men and 15.8 among women). About a third (32.8%) of current tobacco smokers planned to or were thinking about quitting smoking and about a quarter (24.6%) made a quit attempt in the past year. Knowledge about the harms of tobacco use was high; almost 90% of Turkish adults believed that smoking causes serious illnesses such as lung cancer (96.3%), heart attack (95.6%), chronic lung diseases (92.1%), stroke (86.9%), and stomach cancer (86.4%). Likewise, awareness about the harms of second-hand smoke was also high;

83.3% and 95.4% of all Turkish adults believed that breathing second-hand smoke causes serious illness among non-smokers and causes lung illness in children, respectively.¹⁴

Together with MoH, the Turkish Green Crescent Society - a non-profit non-governmental organization (NGO) in Türkiye fighting against addiction including cigarette smoking - delivered strong messages via mainstream and social media about the harmful effects of smoking during COVID-19. According to Green Crescent, smoking cessation calls to the NGO increased from 12 percent of total calls before the COVID-19 pandemic to 82 percent of total calls during the COVID-19 pandemic.¹⁵ However, currently there are no available data about the effect of the COVID-19 pandemic on cigarette sales in Türkiye to help us better understand if people may have quit smoking during this global crisis. Accordingly, the primary aim of this paper is to compare cigarette sales data pre- and post- COVID-19 pandemic in Türkiye.

Material and Methods

Monthly manufactured cigarette sales data from January 2019 through June 2020 were obtained from the Turkish Tobacco and Alcohol Market Regulatory Authority (TAPDK), the government organization charged with regulating tobacco use. As the first case of COVID-19 disease was identified in December 2019 in Wuhan, China, and WHO declared the disease as a Public Health Emergency of International Concern on January 30, 2020, cigarette sales in January, February, March, April, May, and June 2020 were compared with the same months in 2019. Permutation Wilcoxon Signed-Rank Test was used to analyze the data. The relative change of manufactured cigarette sales from 2019 to 2020 was analyzed.

The average monthly cigarette sales in 2019 (expected monthly cigarette sale) was calculated.

Subsequently, the monthly cigarette sales were graphed against the average monthly cigarette sales in 2019 to determine pattern pre- and post-COVID-19.

With Box Jenkins ARIMA (Auto Regressive Integrated Moving Average) time series model, a six month prediction was made for the remaining months in 2020 (July to December).

For the forecast of the remaining months in 2020, we created two forecast models, an estimate made only with 2019 months and a forecast containing the 2020 COVID-19 months.

In order to decide the most suitable model; first, a unit root test was used to determine the number of differences required for time series. Then, the variance of the data was stabilized by box cox transformations. This removed the serial trend and seasonality, the movements of the data were randomized, and the serial was stabilized.

ACF (Autocorrelation Function) and PACF (Partial Autocorrelation Function) graphs of the stationary series were plotted to identify the AR (Auto Regressive) and MA (Moving Average) coefficients and 5 different models were created. AICC (Akaike Information Criterion with Correction) values were calculated to decide the most appropriate of these models. The model with the lowest AICC value was evaluated and showed that there was no remaining autocorrelation from the residuals and that they cannot be separated from a series of white noise with a Ljung-Box test.

The resulting specifications for the two models were ARIMA (1,1,1)12 for Model 1 (based on 2019 and available 2020 data, Ljung-Box test $Q=1.7317$, $p\text{-value} = 0.6299$), and ARIMA (1,1,0)12 for Model 2 (based on only 2019 data, Ljung-Box test $Q=4.9015$, $p\text{-value} = 0.1792$).

Cigarette sales tend to decrease during Ramadan. Therefore, a correction was made in the months of Ramadan for both years (May 6 to June 3 in 2019

and April 23 to May 23 in 2020). The correction adjusted for the average decrease in cigarette sales during Ramadan using monthly sales from 2005 to 2010.¹⁶ Based on the above correction, cigarette sales in those Ramadan months were relatively increased.

The type one error rate was accepted as 0.05. Statistical analysis was conducted with R Studio Version 1.2.5042. Figures and tables were made with Microsoft Excel. Ethical approval is not required for this study.

Results

Monthly cigarette sales from January to June in 2019 and 2020 are presented in Table 1. There was a 21.4% increase in the number of manufactured cigarettes sold in January, and 20.3% increase in June 2020 (when lockdowns lifted on June 1st) when compared to same months in 2019. The number of manufactured cigarettes sold in February, March, April, and May 2020, on the other hand, decreased when compared to the number of manufactured cigarettes sold during the same months in 2019. The biggest difference was observed in April where there was a 40.1% decrease in monthly cigarette sales between 2019 and 2020 (Table 1). A statistically significant decrease (6.8%) was noticed in the cigarette sales during first six months of 2020 comparing to the same months in 2019 ($Z = 2.8031$, $p\text{-value} = 0.005062$); the significance level was tested using the Wilcoxon Signed-Rank Test.

As seen in Figure 1, the cigarette sales in January and June of 2020 were above the average monthly cigarette sales (10,067,171,387 sticks/month) while the cigarette sales in February, March, April, and May of 2020 located below the average line for monthly cigarette sales in 2019.

Table 1 and Figure 2 show the observed and forecasted cigarette sales. Cigarette sales are forecasted to decrease from 11,225,553,750 in January 2020 to 10,002,121,177 in December 2020 based on all available 2019 and 2020 data.

Table 1. Observed and forecasted cigarettes sales by month in 2020

Month	2019	2020	Relative Change (%) ^b
January	9,247,940,030	11,225,553,750	21.38%
February	9,260,562,760	8,090,884,800	-12.63%
March	10,974,929,440	9,715,313,860	-11.48%
April	12,309,450,904	7,616,697,074 ^c	-38.12%
May	10,513,904,244 ^c	9,432,645,636 ^c	-10.28%
June	10,344,251,180 ^c	12,449,577,820	20.35%
July	12,601,865,060	10,699,882,035 ^a	-15.09%
August	10,330,792,840	10,200,373,057 ^a	-1.26%
September	8,852,760,460	10,057,771,572 ^a	13.61%
October	9,082,758,020	10,017,061,225 ^a	10.29%
November	8,225,688,600	10,005,439,100 ^a	21.64%
December	9,061,153,100	10,002,121,177 ^a	10.38%

a. Forecasted using 2019 and 2020 covid months b. Relative change calculated by $((2020-2019) / 2019) * 100$ c. Corrected for Ramadan

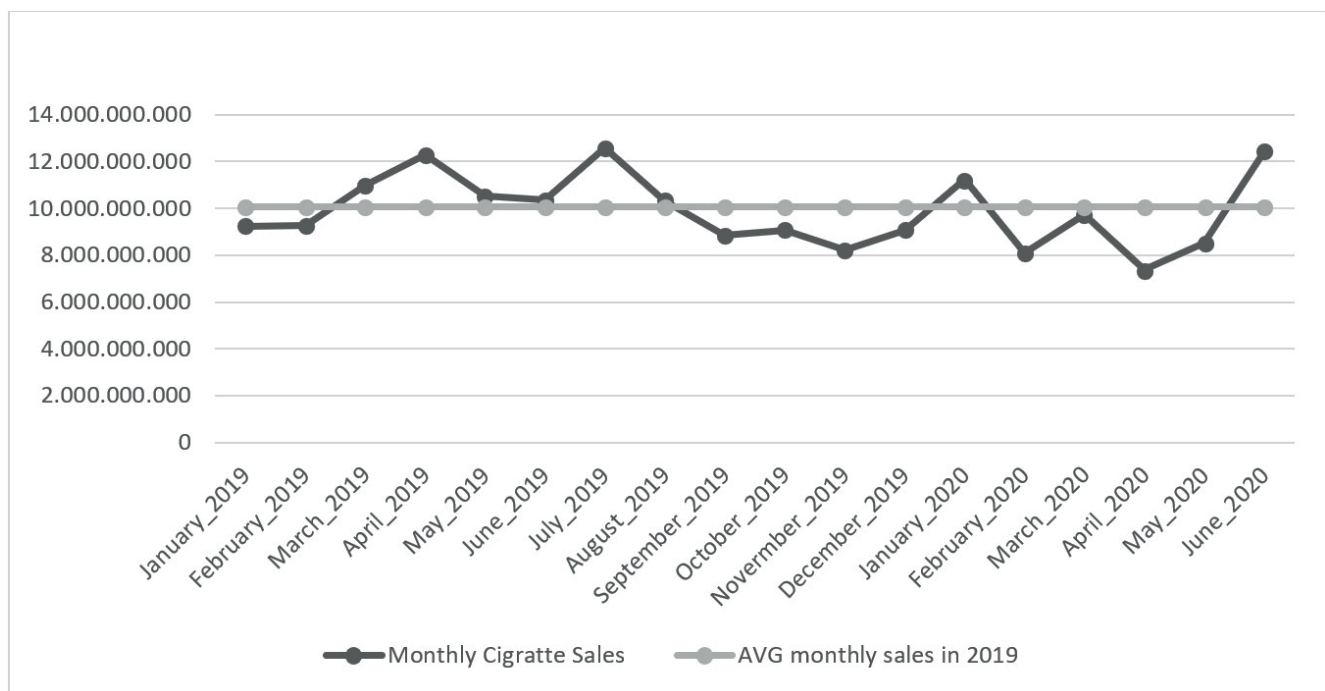


Figure 1. Monthly cigarette sales compared to average monthly cigarette sales

Discussion

This study compared cigarette sales data pre- and post- COVID-19 pandemic in Türkiye. Findings showed that while there was an initial increase in January 2020, cigarette sales decreased significantly during the subsequent months

(February, March, April, and May of 2020) when compared to the same months of the previous year. Though there was a sudden increase in cigarette sales in June 2020 compared to June 2019, the forecasts reveal that cigarette sales will continue to drop in Türkiye for July and August

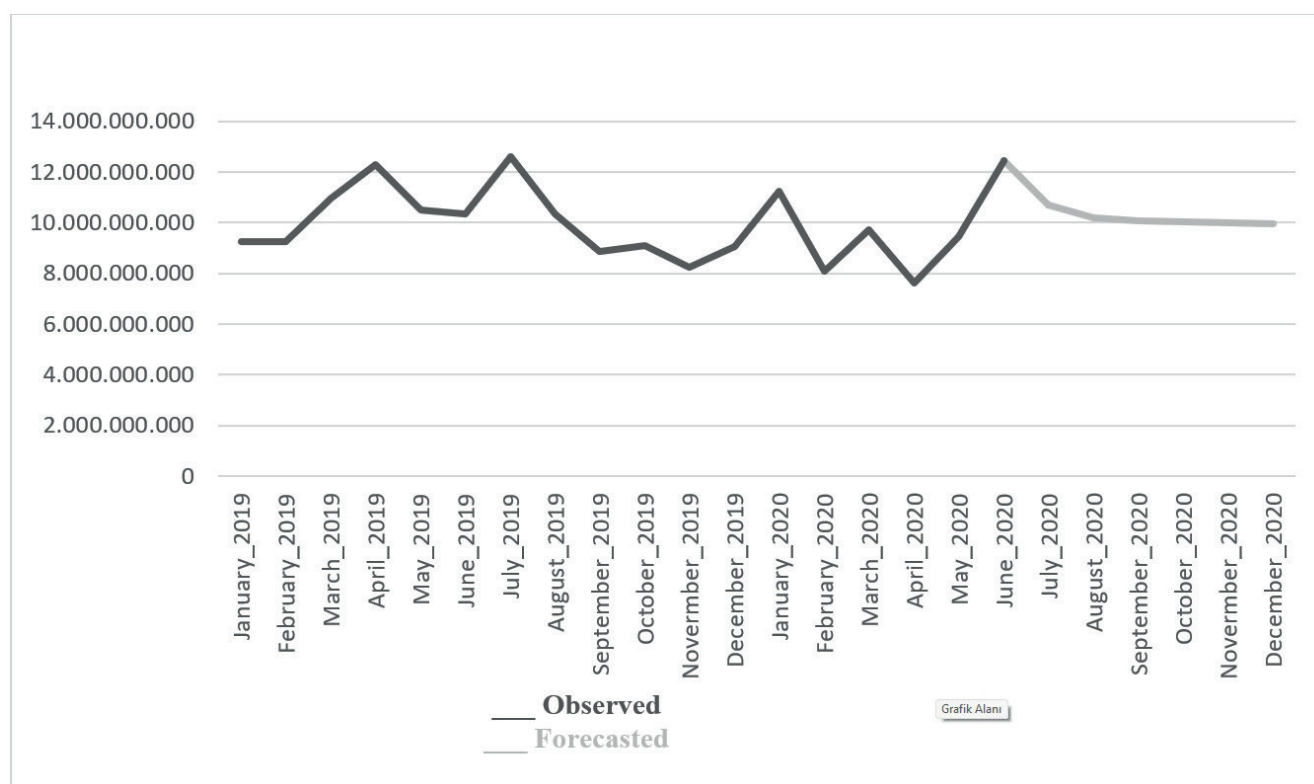


Figure 2. Observed and forecasted cigarette sales, 2019-2020

of 2020 but will then increase for the remaining months of 2020 relative to 2019 sales.

The initial spike in January could potentially be due to stockpiling where smokers accumulate a large quantity of cigarettes as a result of the uncertainty surrounding COVID-19. Data from Altria Group Inc. showed an initial increase of 14% in sales.¹⁷ Likewise, Nielsen data also revealed a 1.1% increase in sales in the United States towards the end of March when states started enacting stay-at-home orders and a 9% increase in the United Kingdom (UK) at around the same time.^{18,19}

The subsequent drop in cigarette sales during COVID-19 lockdown suggest that some Turks may have reduced and quit smoking as a result of the pandemic. This finding is consistent with the increased number of cessation calls received by the Green Crescent,¹⁵ as well as, with trends in several other countries; a survey showed that

over 300,000 smokers in the UK may have quit smoking, 550,000 have attempted to quit and 2.4 million have decreased consumption during the COVID-19 crisis.²⁰ Klemperer et al (2020) also found that in the United States motivation to quit tobacco and electronic cigarette use during the pandemic increased by 35.6% for tobacco users and 37.6% for electronic cigarette users. Moreover, about 22.9% and 22.1% of tobacco and electronic cigarette users respectively reported an attempt to quit.²¹ Likewise, in Italy, about 3% of smokers also decided to quit smoking during the COVID-19 lockdown.²² Interestingly, while it appeared that for other countries cigarette sales decreased after stay-at-home related orders were passed, sales started to drop in Türkiye prior to the identification of the first case. This might be as a result of the strong messages against smoking that were given by public health organizations, associations and academicians after the first studies about the

likely association between smoking and COVID-19 were published.

The number of daily COVID-19 cases dropped to under the 1000 cases per day for the first time on the 20th of May,²³ and the government announced the beginning of normalization process. By the first of June some of the prior limitations were removed by the government and restaurants, cafes, patisseries, tea gardens, association tavern, swimming pool, and spa started to open until 22:00, within the specified rules. This could help explain the increase in cigarette sales in June. Additionally, civil servants who were on administrative leave or included in the flexible working system started their regular work.²⁴ This all may also be a possible reason for the sudden increase of cigarette sales in June 2020.

Some may think that the decrease in manufactured cigarette sales may be influenced by the lockdown rather than concerns about COVID-19, but our results show that the decrease in sales happened before the confirmation of first COVID-19 case and the beginning of lockdown in Türkiye. Despite a slightly increase in June the cigarette sales remained decreased after the lockdown too. A new poll in Finland, conducted by the anti-smoking organization Suomen ASH, found that 15% of people who stopped smoking in the last year did so because of coronavirus. In this poll of more than 2,000 people, health in general was considered by 84% to be the most common reason to want to give up cigarettes. That's up from 73% when the polling was last carried out in 2018.²⁵

Our forecast revealed that cigarette sales drop again in July and August but then increase for the remainder of 2020 relative to 2019 sales. Given this, it will be vital for public health advocates to continue to strengthen the implementation of tobacco control policies and carry out smoking cessation campaigns to alter this trajectory.

There are some limitations with the study; factors other than the COVID-19 pandemic could have also influenced cigarettes sales in Türkiye. It is also difficult to disentangle COVID-19 related byproducts like reduced income, reduced access to stores and public spaces, and increased awareness of potential risk factors to COVID-19 related illness. Future studies could be undertaken to fill this gap. Qualitative studies are also needed to better understand what helps motivate smokers in Türkiye and around the world to quit during such pandemics. Moreover, given that this study only examined data from 2019 and 2020, the question of how this crisis will change tobacco use in the long-term also need to be further explored. While this study primarily focused on the impact of the COVID-19 pandemic on cigarette sales during the first half of 2020, it is important to acknowledge that external factors such as cigarette pricing and tax increases may also have influenced sales trends. Future research could further explore these socio-economic variables to provide a more comprehensive understanding of their effects on cigarette consumption during this unprecedented period.

Conclusions

Türkiye has made significant progress in tackling its tobacco epidemic. To date, it is one of the only countries in the world to have fulfilled all of WHO's MPOWER measures. This study revealed that during the COVID-19 pandemic, cigarette sales significantly decreased in the country and are forecasted to drop further before it increases again for the remaining months of 2020. This trend suggests that Turks might be reducing and quitting smoking. However, to maintain this positive trajectory, public health advocates in the country should continue to utilize COVID-19 as a unique opportunity to strengthen the implementation of existing tobacco control policies and increase

smoking cessation campaigns to further foster an environment that will encourage smokers to quit and protect public health.

Ethical approval

No ethical committee approval was required.

Author contribution

Study conception and design: MAE, TE, CE, CH; data collection: TE, AP, AAA; analysis and interpretation of results: EŞY, KW, AAA, TE; draft manuscript preparation: TE, AP, AAA, CH. The author(s) reviewed the results and approved the final version of the article.

Source of funding

The authors declare the study received no funding.

Conflict of interest

The authors declare that there is no conflict of interest.

Etik kurul onayı

Etik kurul onayı gerekmemiştir.

Yazarlık katkısı

Çalışma konsepti ve tasarımı: MAE, TE, CE, CH; veri toplama: TE, AP, AAA; sonuçların analizi ve yorumlanması: EŞY, KW, AAA, TE; makaleyi hazırlama: TE, AP, AAA, CH. Yazar(lar) sonuçları gözden geçirmiş ve makalenin son halini onaylamıştır.

Finansman

Yazar(lar), çalışmanın herhangi bir finansal destek almadığını beyan etmiştir.

Çıkar çatışması

Yazar(lar) herhangi bir çıkar çatışması olmadığını beyan etmiştir.

References

1. World Health Organization (WHO). Coronavirus disease (COVID-19) pandemic [Internet]. Available at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019> (Accessed on May 26, 2020).
2. World Health Organization (WHO). COVID-19 health system response monitor - Turkey [Internet]. Available at: <https://www.covid19healthsystem.org/countries/turkey/countrypage.aspx> (Accessed on June 12, 2020).
3. T.C. Sağlık Bakanlığı. COVID-19 - Yeni koronavirüs hastalığı [Internet]. Available at: <https://covid19bilgi.saglik.gov.tr/> (Accessed on May 26, 2020).
4. T.C. Sağlık Bakanlığı. Türkiye'deki güncel durum [Internet]. Available at: <https://covid19.saglik.gov.tr/> (Accessed on June 12, 2020).
5. Liu W, Tao ZW, Wang L, et al. Analysis of factors associated with disease outcomes in hospitalized patients with 2019 novel coronavirus disease. Chin Med J (Engl) 2020; 133: 1032-1038. [Crossref]
6. Vardavas CI, Nikitara K. COVID-19 and smoking: a systematic review of the evidence. Tob Induc Dis 2020; 18: 1-4. [Crossref]
7. Guan WJ, Ni ZY, Hu Y, et al. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med 2020; 382: 1708-1720. [Crossref]
8. Hsieh SJ, Zhuo H, Benowitz NL, et al. Prevalence and impact of active and passive cigarette smoking in acute respiratory distress syndrome. Crit Care Med 2014; 42: 2058-2068. [Crossref]
9. Calfee CS, Matthay MA, Kangelaris KN, et al. Cigarette smoke exposure and the acute respiratory distress syndrome. Crit Care Med 2015; 43: 1790-1797. [Crossref]
10. World Health Organization (WHO). Coronavirus disease (COVID-19): Tobacco [Internet]. Available at: <https://www.who.int/news-room/q-a-detail/q-a-on-tobacco-and-covid-19> (Accessed on June 12, 2020).
11. World Health Organization (WHO). Noncommunicable diseases [Internet]. Available at: <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases> (Accessed on June 12, 2020).

12. Seys LJM, Widagdo W, Verhamme FM, et al. DPP4, the Middle East respiratory syndrome coronavirus receptor, is upregulated in lungs of smokers and chronic obstructive pulmonary disease patients. *Clin Infect Dis* 2018; 66: 45-53. [\[Crossref\]](#)
13. Alraddadi BM, Watson JT, Almarashi A, et al. Risk factors for primary Middle East respiratory syndrome coronavirus illness in humans, Saudi Arabia, 2014. *Emerg Infect Dis* 2016; 22: 49-55. [\[Crossref\]](#)
14. Centers for Disease Control and Prevention (CDC). Global adult tobacco survey, fact sheet, Turkey 2016 [Internet]. 2016. Available at: <https://nccd.cdc.gov/GTSSDataSurveyResources/Ancillary/DownloadAttachment.aspx?ID=3452>
15. AA. Koronavirüs sürecinde sigarayı bırakmak isteyenlerin sayısı arttı [Internet]. Available at: <https://www.aa.com.tr/tr/saglik/koronavirus-surecinde-sigarayi-birakmak-isteyenlerin-sayisi-artti/1833703> (Accessed on May 26, 2020).
16. Warren CW, Erguder T, Lee J, et al. Effect of policy changes on cigarette sales: the case of Turkey. *Eur J Public Health* 2012; 22: 712-716. [\[Crossref\]](#)
17. Bloomberg. Marlboros haven't bounced back after coronavirus stockpiling [Internet]. Available at: <https://www.bloomberg.com/news/articles/2020-05-12/marlboros-haven-t-bounced-back-after-coronavirus-stockpiling> (Accessed on June 15, 2020).
18. Tobaccoreporter. Following consumer stockpiling, US cigarette sales plunge [Internet]. Available at: <https://tobaccoreporter.com/2020/04/17/following-consumer-stockpiling-u-s-cigarette-sales-plunge/> (Accessed on June 15, 2020).
19. Financial Times. Smokers stock up on tobacco and nicotine products [Internet]. Available at: <https://www.ft.com/content/362d7d51-6561-493b-a29b-72784157cca7> (Accessed on June 15, 2020).
20. The Guardian. More than 300,000 UK smokers may have quit owing to Covid-19 fears [Internet]. Available at: <https://www.theguardian.com/society/2020/may/04/more-than-300000-uk-smokers-may-have-quit-owing-to-covid-19-fears> (Accessed on May 26, 2020).
21. Klemperer EM, West JC, Peasley-Miklus C, Villanti AC. Change in tobacco and electronic cigarette use and motivation to quit in response to COVID-19. *Nicotine Tob Res* 2020; 22: 1662-1663. [\[Crossref\]](#)
22. Di Renzo L, Gualtieri P, Pivari F, et al. Eating habits and lifestyle changes during COVID-19 lockdown: an Italian survey. *J Transl Med* 2020; 18: 229. [\[Crossref\]](#)
23. T.C. Sağlık Bakanlığı. COVID-19 situation report Turkey | Haftalık Rapor / Weekly Report [Internet]. 2020. Available at: <https://sbsgm.saglik.gov.tr/TR,66560/haftalik-rapor-weekly-report.html> (Accessed on Aug 14, 2020).
24. CNNTÜRK. Son dakika... Cumhurbaşkanı Erdoğan açıkladı! 1 Haziran'dan itibaren hizmet vermeye başlayacak [Internet]. 2020. Available at: <https://www.cnnturk.com/turkiye/son-dakika-cumhurbaskani-erdogan-yeni-koronavirus-tedbirlerini-acikliyor> (Accessed on Aug 14, 2020).
25. News Now Staff. Thousands of Finns quit smoking during coronavirus pandemic | News Now Finland [Internet]. 2020. Available at: <https://newsnowfinland.fi/health-lifestyle/thousands-of-finns-quit-smoking-during-coronavirus-pandemic> (Accessed on Oct 16, 2020).