Acta Medica Alanya

RESEARCH ARTICLE

ARAŞTIRMA

Acta Medica Alanya

2022;6(3): 231-235

DOI: 10.30565/medalanya.1074247

The effects of the COVID-19 pandemic on patient application to outpatient plastic surgery clinics and management of treatments: a retrospective comparative study

COVID-19 Pandemisinin Plastik Cerrahi Kliniklerine Hasta Başvurusu ve Tedavilerin Yönetimine Etkileri: Geriye Dönük Karşılaştırmalı Çalışma

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ABSTRACT

Aim: The aim of this study was to show the differences in patient profile and treatment selections in outpatient plastic surgery clinic, by comparing the pre-pandemic and the pandemic period for one-year processes.

Methods: The patients who applied to outpatient clinic of plastic surgery during the pre-pandemic and pandemic periods were included in the study. The data related to demographic characteristics, reasons for application of outpatient plastic surgery clinic, pre-diagnosis and treatment modalities outpatient or inpatient - were collected retrospectively.

Results: It was observed that there was a significant numerical difference in the number of applications of the patients between the pre-pandemic and the pandemic periods. The application rate of females decreased, while the rate of males increased during the pandemic period. When we examined the application rates in the age groups, the patient application rates in the 12-18, 18-25, and 25-40 age groups increased. In the other age groups, the patient application rates were decreased ($p<0,01$). When the reasons for patient application were examined one by one, the burn injury rate remains the same, while acute-chronic wounds, maxillofacial trauma and other reasons rates increased ($p<0,001$). When the outpatient and inpatient treatment rates were compared, the outpatient treatment rate increased, while the inpatient treatment rate decreased ($p<0,001$).

Conclusion: This study shows the changes in the applications of patients and preferences of treatments during the pandemic period compared to the pre-pandemic period.

Key Words: COVID-19 Pandemic, Outpatient plastic surgery clinic, the patient application

ÖZ

Amaç: Bu çalışmanın amacı, bir yıllık süreçlerde pandemi öncesi ve pandemi dönemini karşılaştırarak plastik cerrahi polikliniğinde hasta profili ve tedavi seçimlerindeki farklılıkları ortaya koymaktır.

Yöntemler: Alanya Alaaddin Keykubat Üniversitesi Tıp Fakültesi Klinik Araştırmalar Etik Kurulu iznini takiben çalışmaya başlandı. Pandemi öncesi ve pandemi süreçleri için sırasıyla 11 Mart 2019 ve 11 Mart 2020 tarihinden itibaren birer yıllık iki dönem alındı. Belirlenen dönemlerde plastik cerrahi polikliniğine başvuran hastalar çalışmaya dahil edildi. Demografik özellikler, plastik cerrahi polikliniğine başvuru nedenleri, ön tanı ve yatarak veya ayaktan tedavi şekilleri ile ilgili veriler geriye dönük olarak toplandı.

Bulgular: Hastaların pandemi öncesi ve pandemi dönemleri arasında başvuru sayılarında anlamlı sayısal fark olduğu gözlendi. Pandemi döneminde COVID-19 vaka sayısı ile ters orantılı olarak hasta başvurularında düşüş gözlemlendi. Pandemi döneminde kadınların başvuru oranı azalırken erkeklerin oranı arttı. Başvuru oranlarına baktığımızda 12-18, 18-25 ve 25-40 yaş gruplarında oranların arttığı görüldü. Diğer yaş gruplarında ise hasta başvuru oranları azaldı ($p<0,01$). Başvuru nedenleri göz önüne alındığında pandemi döneminde tüm nedenlere bağlı olgu sayısında pandemi öncesine göre istatistiksel olarak anlamlı azalma görüldü ($p<0,001$). Hasta başvuru nedenleri tek tek incelendiğinde yanık oranları aynı kalırken, akut-kronik yaralar, maksillofasiyal travma ve diğer başvuru neden oranları arttı ($p<0,001$). Ayakta ve yatarak tedavi oranları karşılaştırıldığında, ayakta tedavi oranı artarken, yatarak tedavi oranı azaldı ($p<0,001$).

Sonuç: Bu çalışma, pandemi döneminde pandemi öncesi döneme göre hastaların uygulamalarındaki ve tedavi tercihlerindeki değişimleri göstermektedir.

Anahtar sözcükler: COVID-19 pandemisi, plastik cerrahi polikliniği, hasta başvurusu.

Received: 16.02.2022 Accepted: 28.10.2022 Published (Online): 31,12,2022

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To cited: Savaş SA. The Effects of COVID-19 Pandemic on Patient Application to Outpatient Plastic Surgery Clinics and Management of Treatments: A Retrospective Comparative Study. Acta Med. Alanya 2022;6(3):231-235 doi: 10.30565/medalanya.1074247

INTRODUCTION

The novel coronavirus (2019-nCoV) disease (COVID-19), whose virus name had been changed by the International Committee on Taxonomy of Viruses to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has had many important effects on public health and human welfare, causing a global pandemic [1] and having had a significant impact on daily human life [2]. During the pandemic, it has become mandatory for patients to avoid non-essential visits to healthcare facilities, in order not to expose themselves or others to further illness [3]. In addition, the COVID-19 pandemic paved the way for the change in the appearance, activities and treatment attitudes of hospitals and clinics, in particular for branches such as plastic, reconstructive and aesthetic surgery, which are not directly related to COVID-19 infection, for the obligatory reshaping of treatment priorities and discovering new treatment methods [4]. However, coronaviruses are prone to genetic recombination that can lead to new genotypes and future outbreaks, therefore the need for constant preparation for ongoing and future outbreaks and changing standards are also non-negligible aspects for plastic surgery departments to consider [5]. This is responsible for the late effects of the COVID-19 pandemic. The fields of plastic surgery are trauma, burns and acute infections, as well as elective reconstruction surgery apart from cosmetic and aesthetic surgery [6]. There are studies in the literature on the modifications in the definition of elective surgery in plastic surgery clinics and the changes in the approach of plastic surgeons to the emergency patient [3-6]. There are several studies in the literature that have examined the effects of the early pandemic period, consisting of the initial six months. However, the number of studies on the later effects of the pandemic period is limited.

The goal of this study was to compare the pre-pandemic and pandemic periods, one year prior and one year after, in order to evaluate the demographic and clinical data of patients who applied to outpatient plastic surgery clinics, and to offer suggestions for relevant patient approach strategies of plastic and reconstructive surgery clinics, during pandemics and/or similar emergencies.

MATERIALS AND METHODS

COVID-19 was declared as a pandemic by the World Health Organization (WHO) on March 11, 2020, on the very same day the first case was reported in Turkey [7]. A term of one year (March 11, 2019 to March 10, 2020) was determined as the pre-pandemic period. Similarly, a successive period (March 11, 2020 to - March 10, 2021) was determined as the pandemic period. The patients who applied to the outpatient clinic of the plastic surgery Training and Research Hospital, during the pre-pandemic and pandemic periods, were included in the study. The essential approval was obtained from the hospital to use its database. The study protocol was approved by the ethics committee of the Faculty of Medicine. Database related to demographic characteristics, reasons for the application of outpatient plastic surgery clinic, pre-diagnosis and treatment selection - outpatient and inpatient - were collected retrospectively. The pre-pandemic and the pandemic periods were evaluated separately.

Statistical

A standard software package (SPSS 20 for Windows; SPSS Inc., Chicago, IL, USA) was used for statistical analysis. Statistical significance was analyzed using the Chi-square test. The Chi-square statistical analysis method was used to assess whether there was a significant difference between the collected parameters belonging to those periods by. In these analyses, a p-value of equal or less than 5% was considered statistically significant. Data was presented as n (%).

RESULTS

During the pre-pandemic period of one year, the number of admissions of patients to the plastic surgery outpatient clinic was 2 645, and during the pandemic period, the number was 968 (Table 1). It was observed that there was a significant numerical difference in the number of applications of the patients between the pre-pandemic and the pandemic periods. It was also noted that there was a decrease in the application of patients, which was inversely related to the number of COVID-19 cases during the pandemic term (Figure 1).

When the pre-pandemic and pandemic periods

were compared, a significant difference was observed in terms of gender (p<0,01) (Table 1).When the rates of admitted female and male patients were considered, the application rates of female and male patients were 55.0% and 45.0%, respectively, over the pre-pandemic period. However, the application rate of females decreased to 49.1%, while the rate of males increased to 50.9% during the pandemic period.

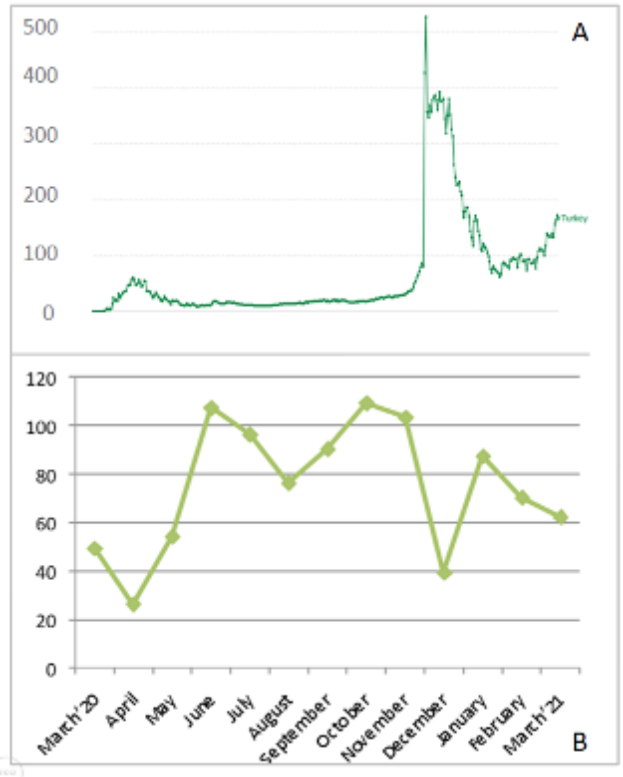

Figure 1: The monthly number of COVID-19 cases (A) and number of patient admission (B)

Based on the statistical analyses, a significant decrease was observed in each age group (p<0,001) during the pandemic period, when compared to the pre-pandemic period (Table 2). When we examined the application rates in the age groups, the patient application rates in the 12-18, 18-25, and 25-40 age groups increased from 4.9% to 5.8%, from 14.4% to 17.5%, and from 26.7% to 30.3%, respectively. In the other age groups, the patient admission rates were decreased (p<0,001).

Regarding the reasons for the application of patients to the outpatient plastic surgery clinic, a statistically significant reduction was observed in the number of all-cause cases during the pandemic period, compared to the pre-pandemic period (p<0,001) (Table 3). When the reasons for patient application were examined, the burn injury rate remained the same (0.2%), while acute wounds, chronic wounds, maxillofacial trauma and other reasons rates increased from 11.2% to 13.3%, from 4.3% to 7.2%, from 1.7% to 3.6%, and from 17.8 to 32.2%, respectively. However, aesthetic and skin tumors - the majority of which were benign skin lesions, such as nevus - were among the reasons for patient application. During the pandemic period, the application rates of these cause-cases decreased from 25.5% to 20.4% and from 39.3% to 3%, respectively.

A statistically significant decrease was observed in the number of outpatient treatments and inpatient treatments during the pandemic period, when compared to the pre-pandemic period (p<0,001) (Table 1). When the outpatient and inpatient treatment rates were compared, the outpatient treatment rate increased from 90.8% to 95.7%, while the inpatient treatment rate decreased from 9.2% to 4.3%.

DISCUSSION

The main results of this study show that the number of admitted patients decreased during the pandemic period. The graph of daily COVID-19 case numbers in Turkey and the graph of the number of admitted patients were evaluated together for a detailed examination. We can point out that the number of patient applications decreased as the number of COVID-19 cases increased. Overall, we suspect that this is due to strict social distancing rules, stay-at-home orders and quarantines. However, it was observed that these effects continued not only in the early period of the pandemic, but also in the late period (Figure 1).

The COVID-19 pandemic has changed the healthcare delivery system of the healthcare institutions. Strict social distancing was only the way to avoid the rapid spread of COVID-19 and the inevitable oversaturation of hospital resources [8]. Despite this fact, patients have been continuing to apply to the plastic surgery outpatient clinic, which has resulted in a marked change in the number of applications of the patients, the reasons for admission and preferences of treatments.

Table 1. Comparison of the gender distributions and treatment selections during the pre-pandemic and the pandemic periods

Variables	Gender		Total % (n)	P	Treatment Option		Total % (n)	p
	Female % (n)	Male % (n)			Outpatient % (n)	Inpatient % (n)		
Pre-pandemic	55.0 (1454)	45.0 (1190)	100 (2644)	0.002*	90.8 (2401)	9.2 (244)	100 (2645)	<0.001
Pandemic	49.1 (475)	50.9 (493)	100 (968)		95.7 (925)	4.3 (42)	100 (967)	
Total	53.4 (1929)	46.6 (1683)	100 (3612)		92.1 (3326)	7.9 (286)	100 (3612)	

Chi square test; *<0.01

Table 2. Distribution of the age groups during the pre-pandemic and the pandemic periods

Variables		Group of age							P
		0-12	12-18	18-25	25-40	40-60	>60	Total	
Pre-pandemic	Count	192	129	382	707	873	412	2645	0.005*
	%	7.3	4.9	14.4	26.7	31.1	15.6	100	
Pandemic	Count	67	56	169	293	258	125	968	
	%	6.9	5.8	17.5	30.3	26.7	12.9	100	
Total	Count	259	185	551	1000	1081	537	3613	
	%	7.2	5.1	15.3	27.7	29.9	14.9	100	

Chi square test; *<0.01

Table 3. Comparison of the reasons of patient application during the pre-pandemic and the pandemic periods

Variables		Reason of Patient Application								P
		Skin tumor	Burn injury	Maxillofacial trauma	Aesthetic	Chronic wound	Acute wound	Others	Total	
Pre-pandemic	Count	1040	4	44	674	114	297	472	2645	<0.001
	%	39.3	0.2	1.7	25.5	4.3	11.2	17.8	100	
Pandemic	Count	223	2	35	197	74	129	312	968	
	%	23.0	0.2	3.6	20.4	7.2	13.3	32.2	100	
Total	Count	1263	6	79	871	184	426	784	3613	
	%	35.0	0.2	2.2	24.7	5.1	11.8	21.7	100	

Chi square test

According to the study by Ozturk et al., asymptomatic American Society of Anesthesiologists (ASA) I-II risk group patients under the age of 69 were the leading choice groups for treatments, including cosmetic surgery, throughout the pandemic period. Patients in other age groups, as well as those in the ASA III-IV risk categories, should be postponed to the greatest extent possible [3]. In a study from Turkey published in 2022 by Tabakan et al., the mean age of the patients was not significantly different between the pre-pandemic and pandemic periods [9].

In our study, when patient applications were evaluated according to age groups, we observed that the rates of patient applications changed. We suspect that the main reason for this change was that the extreme age groups (the group with the age range of 0-12 years, and persons over 60 years of age) were required to remain confined at home, in order to protect themselves as the riskier groups.

However, there are only a few studies that specify whether there were gender variations in applications and treatments throughout the pandemic. In the study by Tabakan et al., no difference was found when the applications were evaluated in terms of gender [9]. When the gender distribution of patient applications was examined, it was observed that there was a decrease in the rate of female applications and an increase in the rate of male applications. The reason for this is that the applications of female patients are mostly for aesthetic reasons. The decrease in applications for aesthetic reasons and the decrease in rates of female application as well as the increase in rates of male application are interrelated.

There are studies in the literature stating that elective cases and aesthetic surgery have a negative effect on COVID-19 infection [3-8], in contrast, there are also studies stating that there is

no serious negative effect [9]. In our study, we also observed that the rate of aesthetic applications decreased because of the effective warning announcements for not applying unnecessarily to hospitals in Turkey. The most common reason for patient application is elective procedures such as cosmetic management of nevi, in cases with skin tumors. Therefore, the rate of general skin tumors among the reasons for patient admission has decreased.

Another important finding of our study was that when the pre-pandemic and pandemic periods were compared in terms of treatment methods, the observed result was a decreased outpatient and inpatient treatment. When the treatment options were examined one by one, however, the rate of inpatient treatment decreased while the rate of outpatient treatment increased. This shows that the treatment plan determined by the plastic surgeon with the patient is mostly outpatient treatment. Thus, the time of stay in the hospital is reduced, the hospital staff workforce, the hospital equipment and its resources can be duly directed to the pandemic [2].

The World Health Organization made many recommendations to confront the COVID-19 pandemic, the most important of which was to remain isolated at home [10]. This situation altered the patient admission behavior in many clinics. While research on COVID-19 was being carried out, many studies were initiated to determine how the pandemic would affect routine patient applications and treatments: researchers have succeeded in overcoming many challenges to this global health emergency [11]. Studies on this subject continue and the results of our study can contribute data on patients to ensure that better protection and treatment strategies are created in pandemic and/or emergency health situations.

The study's limitations are that it was a single-center study and did not include admission rates to private hospitals and clinics. It is, however, a predictor of plastic surgery patient applications in university and public hospitals.

Conclusions

Our research revealed the changes in the applications of patients and preferences of treatments during the pandemic period, compared to the pre-pandemic period. The outcomes of our study may contribute to the establishment of case management approaches and help to predict patient application distribution in future emergencies, in plastic surgery outpatient clinics.

Conflict of Interest: The author declares no conflict of interest related to this article.

Funding sources: The author declares that this study has received no financial support

Ethics Committee Approval: This study was approved by the Clinical Studies Ethics Committee of Alanya Alaaddin Keykubat University, Faculty of Medicine, (Decision number:11-06 Date: 23/06/2021)

ORCID and Author contribution: S.A.S. (ORCID: 0000-0002-9389-2196): Concept and Design, Data collection, Literature search, Analysis and Interpretation, Manuscript Writing, Critical Review.

Peer-review: Externally peer reviewed.

Acknowledgement: Author, thanks to Enfel Can Sezer, Medical Student for their contribution (data collection)

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