

ORIGINAL ARTICLE

Medicine Science 2022;11(1):180-3

The impact of COVID-19-related social restriction and containment measures on admissions for orthopedic surgery in a private hospital: cross-sectional data from a secondary healthcare provider in Turkey **Bertan Cengiz***Acibadem Kayseri Hospital Department of Orthopaedics and Traumatology, Kayseri, Turkey*

Received 15 October 2021; Accepted 21 December 2021

Available online 15.01.2022 with doi: 10.5455/medscience.2021.10.344

Copyright@Author(s) - Available online at www.medicinescience.org

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

**Abstract**

During the COVID-19 pandemic, significant declines in the number of admissions due to several critical disorders have been reported, including cardiovascular diseases and malignancies. However, little is known regarding orthopedic admissions during the COVID-19 pandemic. This study aimed to compare the number of orthopedic surgeries prior to and during the COVID-19 pandemic in a private hospital designated as a secondary healthcare institute. The Turkish Ministry of Health announced strict containment measures and quarantining for those aged <20 and ≥65 years old and aired public messages regarding the importance of staying at home on March 21, 2020. We analyzed orthopedic surgical procedures performed in our private secondary healthcare institute. The primary outcome measure of this study was the difference in the numbers of orthopedic surgeries between the pre-COVID-19 era and the COVID-19 era. There was a significant decline (pre-COVID-19 vs. COVID-19 era) in the total number of surgical procedures (613 vs. 526, $p=0.010$), and the numbers of arthroplasty procedures (132 vs. 88, $p=0.003$), pediatric trauma interventions (82 vs. 49, $p=0.004$), and tumor surgeries (44 vs. 27, $p=0.044$) in the COVID-19 era. Measures imposed for the COVID-19 pandemic in Turkey led to a significant decline in various orthopedic surgeries, including trauma and malignancy-related surgeries. Healthcare authorities should not only focus on COVID-19 but also provide care for those with signs and symptoms of severe disorders, including malignancies.

Keywords: COVID-19, pandemic, orthopedics, surgery, malignancy, trauma, social restriction**Introduction**

Several cases of severe pneumonia were reported in Wuhan, Hubei Province, China, towards the end of 2019 [1]. Following the isolation of a novel coronavirus in the throat swab sample of the subjects, the virus was eventually named as the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), and the disease was defined as coronavirus disease-2019 (COVID-19) [2].

The rapid spread of the virus from one country to another led to the pandemic, which caused significant burdens on healthcare systems globally. To prevent the spread of COVID-19 and limit the number of patients requiring hospital and ICU admissions, almost all countries announced social restrictions and distance measures. Social restrictions have been shown to reduce the

number of subjects with COVID-19 and those requiring hospital admissions [3]. However, strict social distancing, self-isolation, and quarantining measures have resulted in a decline in the number of admissions from unassociated and severe conditions, including life-threatening conditions such as acute myocardial infarction [4].

Turkish authorities announced the first social restrictions, comprising curfews for individuals aged <20 years or ≥65 years, patients with chronic diseases, on March 21, 2020. Moreover, the Turkish Ministry of Health recommended postponing elective surgeries in order to overcome the healthcare burden resulting from COVID-19 admissions. Although a significant decline has been reported in the number of admissions from several critical disorders, including cardiovascular diseases and malignancies, little is known regarding the orthopedic admissions and surgeries during the COVID-19 pandemic.

This study aimed to compare the number of admissions from orthopedic conditions before and during the COVID-19 pandemic in a private hospital in Turkey.

***Corresponding Author:** Bertan Cengiz, Acibadem Kayseri Hospital Department of Orthopaedics and Traumatology, Kayseri, Turkey
E-mail: drbertan@gmail.com

Materials and Methods

The study was approved by the ethics committee of Acibadem University (Date: 07.04.2021, Number: 2021-07/08), and COVID-19 scientific research department of the Ministry of Health of the Republic of Turkey (Approved form number: B C-2021-03-28T16_30_07), and was conducted in accordance with the Helsinki declaration. We analyzed orthopedic surgical procedures performed in our secondary healthcare institute that is part of the Acibadem Hospitals Group in Turkey. The retrospective evaluation of patient data was conducted using the electronic database records of patients admitted to the Orthopedics Department of Acibadem Kayseri Hospital for surgical interventions before and after March 21, 2020. This date was accepted as the threshold for defining the pre-COVID-19 era (prior year) and the COVID-19 era (following year). In addition to overall comparison, orthopedic surgeries were divided into the following groups: sports surgery & arthroscopy (sites), arthroplasty (sites), trauma surgery (all, pediatric, adult; and upper and lower extremity), tumor surgery (soft tissue, bone), other pediatric surgeries, spine surgery, and hand surgery. Subjects admitted primarily with a non-orthopedic cause were excluded. The primary outcome measure of this study was the difference in the numbers of patients admitted for orthopedic surgeries between

the pre-COVID-19 era and the COVID-19 era.

Statistical analysis

All analyses were performed on SPSS v21 (SPSS Inc., Chicago, IL, USA). Data are given as frequency (row percentage). The number of cases before and after the pandemic was analyzed with the one-sample chi-square test under the null hypothesis of equal probabilities ($H_0: p_1=p_2=0.50$). $p<0.05$ values were accepted as statistically significant results.

Results

A total of 526 patients were admitted to our orthopedics department for surgical intervention in the COVID-19 era, whereas there had been 613 admissions for orthopedic surgery in the pre-COVID-19 period ($p=0.010$). Although the number of patients admitted for sports surgery & arthroscopy, adult trauma, other pediatric surgeries, spine surgery, and hand surgery were similar in the pre-COVID-19 and COVID-19 eras, and there were significant declines in the number of patients admitted for arthroplasty (132 vs. 88, $p=0.003$), all trauma (162 vs. 119, $p=0.010$), pediatric trauma (82 vs. 49, $p=0.004$), and tumor (44 vs. 27, $p=0.044$) surgeries (Table 1).

Table 1. Number of cases before and after pandemic

	Before Pandemic (March 19 - Feb 20)	After Pandemic (March 20 - Feb 21)	p
All cases	613 (53.82%)	526 (46.18%)	0.010
Sports surgery & Arthroscopy			
Shoulder	48 (43.64%)	62 (56.36%)	0.182
Hip	2 (28.57%)	5 (71.43%)	0.257
Knee	135 (48.04%)	146 (51.96%)	0.512
Ankle	12 (48.00%)	13 (52.00%)	0.841
Total	197 (46.57%)	226 (53.43%)	0.159
Arthroplasty			
Shoulder	8 (80.00%)	2 (20.00%)	0.058
Hip	58 (60.42%)	38 (39.58%)	0.041
Knee	66 (57.89%)	48 (42.11%)	0.092
Total	132 (60.00%)	88 (40.00%)	0.003
All trauma			
Upper extremity	89 (57.42%)	66 (42.58%)	0.065
Lower extremity	73 (57.94%)	53 (42.06%)	0.075
Total	162 (57.65%)	119 (42.35%)	0.010
Pediatric trauma			
Upper extremity	42 (60.00%)	28 (40.00%)	0.094
Lower extremity	40 (65.57%)	21 (34.43%)	0.015
Total	82 (62.60%)	49 (37.40%)	0.004
Adult trauma			
Upper extremity	47 (55.29%)	38 (44.71%)	0.329
Lower extremity	33 (50.77%)	32 (49.23%)	0.901
Total	80 (53.33%)	70 (46.67%)	0.414
Tumor			
Soft tissue	28 (60.87%)	18 (39.13%)	0.140
Bone	16 (64.00%)	9 (36.00%)	0.162
Total	44 (61.97%)	27 (38.03%)	0.044
Pediatric	34 (59.65%)	23 (40.35%)	0.145
Spine	8 (66.67%)	4 (33.33%)	0.248
Hand surgery	36 (48.00%)	39 (52.00%)	0.729

Data are given as frequency (row percentage). p values were obtained by one sample chi-square test under the null hypothesis of equal probabilities

Subgroup evaluation of arthroplasty procedures showed that the number of shoulder and knee arthroplasties were similar before and after COVID-19; however, the number of hip arthroplasties had been significantly reduced during the COVID-19 pandemic compared to the pre-COVID-19 era (58 vs. 38, $p=0.041$) (Figure 1 and 2).

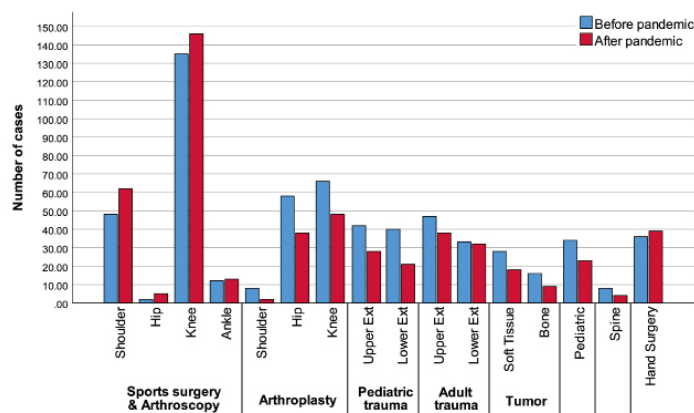


Figure 1. Number of cases before and after the pandemic

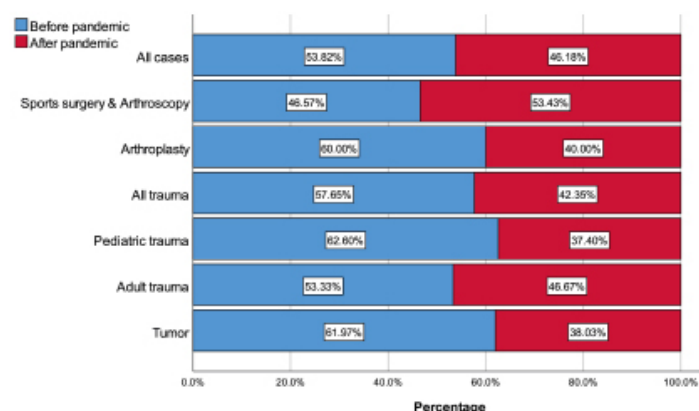


Figure 2. Distribution of cases before and after the pandemic

Discussion

This study was conducted to establish the impact of the COVID-19 pandemic and related social restrictions on patient admissions due to orthopedic conditions in our institute, which is a private hospital designated as a secondary healthcare center in Turkey. Basically, our findings show a significant decline in the number of patients admitted for orthopedic causes during the COVID-19 pandemic compared to the pre-COVID era. Our results show that the number of patients admitted for arthroplasty, especially hip arthroplasty, decreased significantly during the COVID-19 pandemic. There was also a significant decline in the number of pediatric trauma patients after COVID-19. However, the most striking finding of this study was that the number of patients admitted for tumor surgery was also significantly decreased during the COVID-19 pandemic, which would suggest reduced healthcare access for patients or problems in diagnosis and follow-up of suspected patients[5,6].

The strict social restrictions and measures imposed by the government during the COVID-19 pandemic in Turkey led to a significant decline in the number of total trauma patients compared to the corresponding time period of the previous year.

The reduction in trauma patients was similar to that reported in other countries. Herngiou et al. reported a similar decline (up to 32%) in France following pandemic-related social restrictions when results were compared to the year 2018 [7]. In another study from Turkey, Kalem et al. reported a 50% decline in the number of trauma patients after the pandemic compared to the same time interval of the previous year [8]. The social restrictions announced in Turkey primarily covered those aged ≥ 65 years (who are at-risk for severe COVID-19) and the young population aged <20 years (who were believed to play a major role in the spread of the infection). It is clear that the precautions and social restrictions led to a significant decline in trauma admissions, which can be easily explained by lower mobility and limitations in daily living. In addition, we also observed a significant decline in the number of arthroplasty procedures performed. Although this might be seen as an intriguing result, it must be noted that this is a direct result of the Ministry of Health's recommendation to postpone non-emergency surgeries [9].

On the other hand, there was also a significant decline in the number of patients who had undergone tumor resection surgeries (mostly performed for orthopedic malignancies) during the COVID-19 pandemic compared to the corresponding time period of the previous year. This decline in admissions from malignancies may mainly be explained by limited access to healthcare and possible delays in diagnosis. These factors could be associated with the reluctance to seek medical care for fear of disease contraction in hospitals. The strict social distancing, self-isolation, and quarantining recommended by the health authorities are likely to have resulted in the development of such responses in the population, and therefore, represent risks for the general health of the population. Data concerning the analyses of emergency conditions and the decline in admissions associated with cardiovascular causes in several studies support this finding [10-13]. It appears that the reluctance to seek medical care resulting from fear of potential COVID-19 infection has unintentionally led to collateral problems that could increase morbidity and mortality from orthopedic malignancies. Therefore, the integration of the healthcare system should not only focus on the prevention and consequences of the COVID-19 pandemic but should also provide solutions for severe non-emergency conditions, such as malignancy development (from the patients' perspective). Priority should be given to programs or policies that aim to advise patients about seeking medical care for unexplained symptoms even during the COVID-19 pandemic. Because, in such cases, the delay in diagnosis and treatment could potentially increase morbidity and mortality.

Conclusion

This article, mainly focusing on the number of admissions to a secondary-level, private orthopedics clinic with respect to COVID-19 restrictions, shows a significant decline in admissions from trauma and malignancies during the COVID-19 pandemic compared to the same time interval in the prior year. It is expected that the curfews and restrictions announced by the government would lead to significant declines in the numbers of trauma- and arthroplasty-related admissions. However, there was also a significant decline in the number of admissions for orthopedic malignancies. Healthcare authorities should not only focus on

COVID-19 but should also aim to design public announcements and healthcare policies that can increase the likelihood of seeking medical attention in those with signs and symptoms of severe disorders, including malignancies.

Conflict of interests

The authors declare that they have no competing interests.

Financial Disclosure

All authors declare no financial support.

Ethical approval

The study was approved by the ethics committee of Acibadem University (Date: 07.04.2021, Number: 2021-07/08).

References

1. Wang D, Hu B, Hu C, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in wuhan, china. JAMA. 2020;323:1061-9.
2. Harapan H, Itoh N, Yufika A, et al. Coronavirus disease 2019 (COVID-19): A literature review. J Infect Public Health. 2020;13:667-73.
3. Wellenius GA, Vispute S, Espinosa V, et al. Impacts of social distancing policies on mobility and COVID-19 case growth in the US. Nature Communications. 2021;12:3118.
4. Garcia S, Albaghdadi MS, Meraj PM, et al. Reduction in st-segment elevation cardiac catheterization laboratory activations in the united states during COVID-19 pandemic. J Am Coll Cardiol. 2020;75:2871-2.
5. Patt D, Gordan L, Diaz M, et al. Impact of COVID-19 on cancer care: how the pandemic is delaying cancer diagnosis and treatment for american seniors. JCO Clin Cancer Inform. 2020;4:1059-71.
6. Prajapati A, Gupta S, Nayak P, et al. The effect of COVID-19: Adopted changes and their impact on management of musculoskeletal oncology care at a tertiary referral centre. J Clin Orthop Trauma. 2021;23:101651.
7. Hernigou J, Morel X, Callewier A, et al. Staying home during "COVID-19" decreased fractures, but trauma did not quarantine in one hundred and twelve adults and twenty eight children and the "tsunami of recommendations" could not lockdown twelve elective operations. Int Orthop. 2020;44:1473-80.
8. Kalem M, Kocaoglu H, Merter A, et al. Effects of COVID-19 pandemic curfew on orthopedic trauma in a tertiary care hospital in Turkey. Acta Orthop Traumatol Turc. 2021;55:191-5.
9. Oguzkaya S, Misir A, Ozcamdalli M, et al. Impact of the COVID-19 pandemic on orthopedic fracture characteristics in three hospitals in Turkey: A multi-center epidemiological study. Jt Dis Relat Surg. 2021;32:323-32.
10. Huet F, Prieur C, Schurtz G, et al. One train may hide another: Acute cardiovascular diseases could be neglected because of the COVID-19 pandemic. Arch Cardiovasc Dis. 2020;113:303-7.
11. De Rosa S, Spaccarotella C, Basso C, et al. Reduction of hospitalizations for myocardial infarction in Italy in the COVID-19 era. Eur Heart J. 2020;41:2083-8.
12. Rodriguez-Leor O, Cid-Alvarez B, Ojeda S, et al. Impact of the COVID-19 pandemic on interventional cardiology activity in Spain. REC Interv Cardiol. 2020;2:82-9.
13. Metzler B, Siostrzonek P, Binder RK, et al. Decline of acute coronary syndrome admissions in Austria since the outbreak of COVID-19: the pandemic response causes cardiac collateral damage. Eur Heart J. 2020;41:1852-3.