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Research Article / Araştırma Makalesi

Demographic and epidemiologic trends in sports medicine outpatient clinic visits: Tale of an expert

Spor hekimliği poliklinik başvurularında demografik ve epidemiyolojik eğilimler: Bir uzmanın deneyimi

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ABSTRACT

Objective: To evaluate the demographic and clinical characteristics of patient admissions to an outpatient clinic of Sports Medicine within a 1-year period after Novel Coronavirus Disease-2019 pandemic.

Materials and Methods: The files of all patients who admitted to the outpatient clinic between April 2022 and April 2023 were scanned retrospectively. The age, gender and month of admission of all patients were recorded. Four categories of reasons for admission were analyzed: 1) screening for sports participation, 2) sports injury, 3) medical advice, 4) misdirection/misadmission.

Results: A total of 4151 patient files were recruited to the study. The male gender and ages of ≤18 years were in majority among the overall patients by the rates of 57.74% and 42.16% respectively. The most common reason for admission was sports injury (50.37%), followed by screening for sports participation (35.87%), misdirection/misadmission (9.69%), and medical advice (4.07%). The highest rate of overall admissions was in September (13.41%).

Conclusions: Pandemic has influenced the view of exercising and sport among society, increasing the popularity of Sports Medicine and the admissions to the outpatient clinics for various reasons. The surprising relatively high rate of misdirected/misadmitted patients appears as economic and work burden to healthcare system. Sports Medicine should be described to both society and physicians of other medical branches properly.

Keywords: *Outpatient clinic, patient admission, sports medicine.*

ÖZ

Amaç: Yeni Koronavirüs Hastalığı-2019 pandemisinden sonra 1 yıllık süre içerisinde Spor Hekimliği polikliniğine başvuran hastaların demografik ve klinik özelliklerinin değerlendirilmesi.

Gereç ve Yöntem: Nisan 2022 ve Nisan 2023 arasında polikliniğe başvuran tüm hastaların dosyaları geriye dönük olarak incelendi. Tüm hastaların yaş, cinsiyet ve başvuru yaptıkları ay parametreleri kaydedildi. Başvuru nedenleri 4 ana kategoride incelendi: 1) spora katılım değerlendirmesi, 2) spor yaralanması, 3) tıbbi danışma, 4) yanlış yönlendirme/yanlış başvuru.

Bulgular: Toplam 4151 hasta dosyası çalışmaya dahil edildi. Tüm hastalar içerisinde, sırasıyla %57.74 ve %42.16 oranlarında olmak üzere erkek cinsiyet ve ≤18 yaş grubu çoğunluktaydı. En sık başvuru nedeni spor yaralanması (%50.37) iken, bunu sırasıyla spora katılım değerlendirmesi (%35.87), yanlış yönlendirme/yanlış başvuru (%9.69), ve tıbbi danışma (%4.07) takip etmekteydi. Tüm başvurular göz önüne alındığında, en sık başvuru yapılan ay Eylül idi (%13.41).

Sonuçlar: Pandemi toplum genelinde egzersiz ve spora bakış açısını etkiledi, bu nedenle Spor Hekimliği branşının popülerliğinde ve bu polikliniğe çeşitli nedenlerle başvuru sayısında artış görüldü. Yanlış yönlendirilmiş/yanlış başvuru yapmış hastaların şaşırtıcı bir biçimde rölatif yüksek oranda olması, sağlık sistemine ekonomi ve iş yükü olarak yansımaktadır. Spor Hekimliği branşının hem topluma hem de diğer tıbbi branş uzmanı hekimlere doğru bir biçimde tanıtılmasına ihtiyaç vardır.

Anahtar Sözcükler: *Poliklinik, hasta başvurusu, spor hekimliği*

INTRODUCTION

Exercise is a required component of healthy lifestyle enhancing immune system, psychosocial activation, physical and cognitive functionality (1-3). Regular exercise in forms of both recreational and elite sports plays a prophylactic role in the development of many chronic diseases (involving neurological, musculoskeletal, cardiopulmonary systems), aging-related incapacity and cancer (1,2). Another benefit of exercise is in the management of pre-existing chronic diseases e.g. diabetes and hypertension. Thus, the call of "exercise is medicine" has provided a new perspective to medicine and healthcare (2). However, the increased risk of

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injury which accompanies with recreational and elite sports has emerged as another entity (3,4).

The medical specialty that manages sports injuries (SI) is Sports Medicine. Besides, the field of Sports Medicine involves (a) pre-participation screening of athletes for sports (PPS) as well as periodic re-evaluations, (b) prescribing exercise for chronic diseases and developing prevention programs, (c) providing medical advice (MA) on sports nutrition, ergogenic supplements, doping use and talent selection (1).

The Novel Coronavirus Disease-2019 pandemic and the consequent lockdown intervals have changed the perception of exercise among public (5). Exercise has been reported as the core tactic of pandemic management, leading people of all ages to sports participation (2). Moreover, the 2020 guideline of World Health Organization regarding physical activity recommendations has also raised awareness of exercise (6), and thereby probably of the Sports Medicine outpatient clinic (SMOC). Hashmi et al. have declared that the pandemic invited radical novelties to the establishment of SMOCs (7), enabling us to make a prediction about the impact of pandemics on the admissions to SMOC.

The healthcare service quality of any medical specialty and center, including the SMOC, can be determined in an organized manner by a clinical audit. Analyzing the patient admissions (PAs) is the basic part of audit of which the obtained results help to view the reasons and distribution of admissions, compare the data with other medical centers, observe the diverse presentation of diseases, develop strategies for a better healthcare, and plan the education of healthcare professionals (8).

Limited studies reporting the audit of SMOC admissions exist in the current literature, none of which are post-pandemic (1,9,10). Considering that the pandemic increased the sports participation (5,6), it is important to see its reflection on PAs to the SMOC. Thus, there is a need to elucidate the reasons for admitting to SMOC in detail. The findings could improve the knowledge of growing sports participation and injury burden and help to develop novel coping strategies. Moreover, the healthcare providers of Sports Medicine could see the effects of pandemic-induced pause on SMOC processing. The aspects of this specialty requiring improvement could be evaluated in line with the novel needs. This study aimed to determine the cumulative data with demographic and clinical characteristics of PAs to a SMOC within a 1-year period after pandemic, from a real-life perspective of a Sports Medicine expert.

MATERIAL and METHODS

This study was conducted at the SMOC of Bilkent City Hospital in the second most populated city of Türkiye; Ankara (11). The sole SMOC was established by the outbreak of pandemic and located in the Department of Physical Medicine and Rehabilitation of the hospital (as a separated building), together with the other outpatient clinics concerning the department. Healthcare was served by an appointment system in which the patients can make their own decision on the medical specialty to be examined despite a medical guiding system. Besides, the other outpatient clinics of all medical specialties could refer the relevant patients to the SMOC. The SMOC healthcare was served by a sole Sports Medicine expert (from April 11th 2022). This study was granted by the ethics council of the hospital (E2-23-3826). The personal identities of patients were kept in confidence.

All of the PAs to SMOC between April 11th 2022 and April 10th 2023 were scanned in the electronic database of hospital retrospectively. The reasons for admission were divided into four groups: (a) PPS, (b) SI, (c) MA (1), (d) Misdirected/misadmitted patients (MDMA). The repeated admissions due to control examination or consulting the blood and radioimaging tests of which were requested by the Sports Medicine expert were excluded. The single visits of these re-admitted patients were included considering their final diagnosis. The re-admissions of the same patients for different reasons within the four categories were also included separately.

The demographic data including age, gender and the month of admission to SMOC of all patients were recorded. Different additional details were also evaluated for each group: (a) the type of sports, and initial or periodic screening of PPS group; (b) the type of sports, injured body area and pathological type of injury of SI group; (c) exercise prescription for chronic diseases, advice on supplement use, type of sports selection or sports nutrition of MA group; (d) misdirection of the patients from another medical specialty or misadmission of the patients themselves assuming that examination of Sports Medicine was necessary of MDMA group. The types of sports consisted of body-building, fitness, basketball, soccer, volleyball, American football, martial arts, weightlifting, wrestling, bocce and bowling, swimming, cycling, tennis, handball, gymnastics, pentathlon, parkour, dance and ballet, archery, yoga and Pilates. Besides, patients with injuries due to playing a musical instrument (repetitive joint movements) were included in SI group.

The age of all groups were assessed in three age groups consisting of: (a) ≤18, (b) between 19-50 and (c) ≥51 years

(8,12). The injured body area and pathological type of injury for SI group were classified according to the consensus statement of International Olympic Committee in 2020 (13). The injured body areas were defined as (a) neck, (b) upper limb (divided to shoulder, upper arm, elbow, forearm, wrist, hand), (c) trunk (divided to chest, thoracic spine, lumbosacral, abdomen), and (d) lower limb (divided to hip/groin, thigh, knee, lower leg, ankle, foot). The pathological types of injury were defined separately for each tissue: (a) muscular injury, contusion, compartment syndrome, tendinopathy and tendon rupture for the muscle/tendon; (b) peripheral nerve injury for the nervous; (c) fracture, bone stress injury, bone contusion, avascular necrosis, and physis injury for the bone; (d) cartilage injury, arthritis, synovitis/capsulitis, and bursitis for the cartilage/synovium/bursa; and lastly (e) joint sprain and chronic instability for the ligament/joint capsule (13).

All statistical data were analyzed using IBM SPSS Statistics software version 26.0.0 (IBM Corp., New York) and the figures were designed by Microsoft Excel program version 16.66.1 (Microsoft Inc., Redmond, Washington). The check of correct data transfer and avoidance of any missing or mistaken value were ensured. Descriptive data were presented as numbers (n) and percentages (%). The continuous variables were expressed as mean ± standard deviation (SD) with minimum and maximum values.

RESULTS

A total of 5684 PAs to the SMOC were scanned of which 1533 were excluded due to recurrent admission, thus 4151 patient files were recruited to the study. With regard to the demographic data, 1754 (42.26%) and 2397 (57.74%) of patients were female and male respectively, with a mean age of 30.98±26.83 (4-82) years. A majority of the patients were aged ≤18 years (42.16%), followed by the ones between 19-50 (39.70%). The most common reason of admission to the SMOC was SI (50.37%). Table 1 represented the demographic data of patients regarding the reason of admission groups.

Table 1. The demographic data of patients.

		Groups											
		PPS, n (%)			SI, n (%)			MA, n (%)			MDMA, n (%)		
Gender		Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total
Age (years)	≤ 18	355 (8.55)	647 (15.59)	1002 (24.14)	203 (4.89)	501 (12.07)	704 (16.96)	18 (0.43)	26 (0.63)	44 (1.06)	0 (0)	0 (0)	0 (0)
	19-50	186 (4.48)	204 (4.91)	390 (9.39)	482 (11.61)	516 (12.43)	998 (24.04)	41 (0.99)	75 (1.80)	116 (2.79)	68 (1.64)	76 (1.83)	144 (3.47)
	≥ 51	38 (0.92)	59 (1.42)	97 (2.34)	172 (4.14)	217 (5.23)	389 (9.37)	4 (0.10)	5 (0.12)	9 (0.22)	187 (4.51)	71 (1.71)	258 (6.22)
	Total	579 (13.95)	910 (21.92)	1489 (35.87)	857 (20.64)	1234 (29.73)	2091 (50.37)	63 (1.52)	106 (2.55)	169 (4.07)	255 (6.15)	147 (3.54)	402 (9.69)

MA: medical advice; MDMA: misdirected/misadmitted patients; n: number of patients; PPS: pre-participation screening of athletes for sports; SI: sports injuries; %: the percentage value considering the total included patients

The distribution of PAs by months was shown in Figure 1. The month with the highest number of overall PAs was September (13.41%). The most frequent admission month of the PPS group was June (18.07%), whereas of the SI, MA and MDMA was September (12.48%, 16.57%, and 10.20%, respectively).

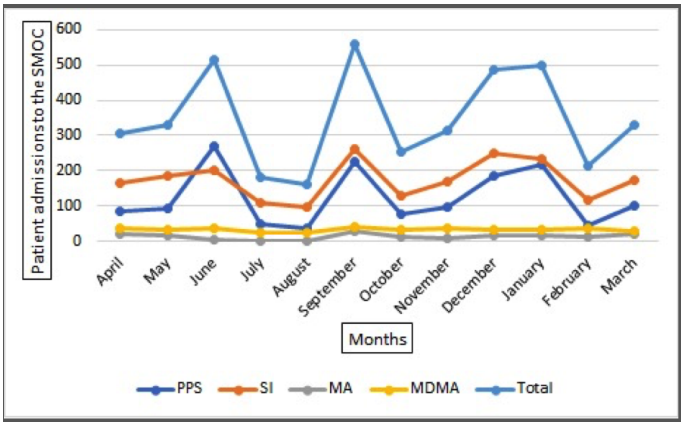

Figure 1. The distribution of patient admissions to the Sports Medicine outpatient clinic by months.

The PPS group consisted of patients with a majority of male gender (61.12%), and a mean age of 19.49±13.34 (4-61) year. Most of the patients were ≤18 years old (67.29%) (Table 1). The PAs for initial PPS were in a higher rate (61.25%), with the most involved sport type of soccer (17.39%). Figure 2 expressed the distribution of PPS group by initial or periodic admission with the type of sports.

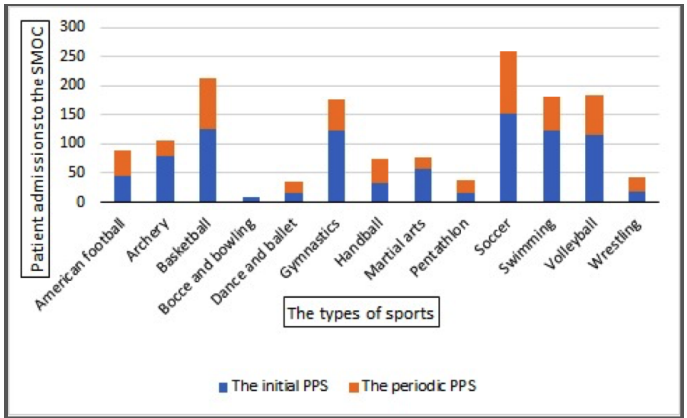

Figure 2. The distribution of pre-participation screening of athletes in all types of sports by the initial or periodic admission.

Table 2. The injured body areas and types of injuries.

Injured body area	Type of injury	n (%)
NECK AND TRUNK	**Neck**	
	Muscular injury/contusion	83 (3.97%)
	Joint sprain	61 (2.92%)
	Chest	
	Muscular injury/contusion	11 (0.53%)
	Bone stress injury/contusion	2 (0.10%)
	Thoracic spine	
	Muscular injury/contusion	79 (3.78%)
	Arthritis	5 (0.24%)
	Joint sprain	73 (3.49%)
	Lumbosacral	
	Muscular injury/contusion	56 (2.68%)
	Bone stress injury/contusion	24 (1.15%)
	Arthritis	11 (0.53%)
	Joint sprain	82 (3.92%)
	Abdomen	
	Muscular injury/contusion	31 (1.48%)
UPPER LIMB	**Shoulder**	
	Tendinopathy/tendon rupture	36 (1.72%)
	Bone stress injury/contusion	12 (0.57%)
	Cartilage injury	13 (0.62%)
	Synovitis/capsulitis/bursitis	33 (1.58%)
	Joint sprain	26 (1.24%)
	Chronic joint instability	21 (1.00%)
	Upper arm	
	Muscular injury/contusion	117 (5.59%)
	Bone fracture	1 (0.05%)
	Elbow	
	Tendinopathy/tendon rupture	77 (3.68%)
	Bone stress injury/contusion	2 (0.10%)
	Synovitis/capsulitis/bursitis	31 (1.48%)
	Joint sprain	21 (1.00%)
	Forearm	
	Muscular injury/contusion	105 (5.02%)
	Bone fracture	2 (0.10%)
	Wrist	
	Peripheral nerve injury	2 (0.10%)
	Bone fracture	6 (0.29%)
	Bone stress injury/contusion	12 (0.57%)
	Synovitis/capsulitis/bursitis	24 (1.15%)
	Joint sprain	49 (2.34%)
	Chronic joint instability	30 (1.43%)
	Hand	
	Arthritis	5 (0.24%)
	Joint sprain	74 (3.54%)

Table 2. The injured body areas and types of injuries.

Injured body area	Type of injury	n (%)
LOWER LIMB	**Hip/groin**	
	Tendinopathy/tendon rupture	**30 (1.43%)**
	Bone stress injury/contusion	**32 (1.53%)**
	Avascular necrosis	**1 (0.05%)**
	Physis injury	**9 (0.43%)**
	Synovitis/capsulitis/bursitis	**22 (1.05%)**
	Joint sprain	**23 (1.10%)**
	Thigh	
	Muscular injury/contusion	97 (4.64%)
	Knee	
	Tendinopathy/tendon rupture	27 (1.29%)
	Bone stress injury/contusion	13 (0.62%)
	Physis injury	29 (1.39%)
	Cartilage injury	59 (2.82%)
	Synovitis/capsulitis/bursitis	23 (1.10%)
	Joint sprain	67 (3.20%)
	Chronic joint instability	61 (2.92%)
	Lower leg	
	Muscular injury/contusion	38 (1.82%)
	Compartment syndrome	2 (0.10%)
	Bone fracture	2 (0.10%)
	Bone stress injury/contusion	47 (2.25%)
	Ankle	
	Tendinopathy/tendon rupture	78 (3.73%)
	Peripheral nerve injury	5 (0.24%)
	Bone fracture	9 (0.43%)
	Bone stress injury/contusion	24 (1.15%)
	Synovitis/capsulitis/bursitis	17 (0.81%)
	Joint sprain	45 (2.15%)
	Chronic joint instability	26 (1.24%)
	Foot	
	Muscular injury/contusion	12 (0.57%)
	Bone stress injury/contusion	37 (1.77%)
	Physis injury	39 (1.87%)

The SI group consisted of patients with a higher rate of male gender (59.02%), and a mean age of 32.74±18.49 (7-64) years. The patients with ages between 19-50 years were in a majority (47.73%) (Table 1). The injured body areas and pathological types of injury regarding the SI group was listed in Table 2. The most common injured areas were lumbosacral (33.40%), shoulder (20.17%), and knee (31.92%) in the regions of neck and trunk, upper limb and lower limb, respectively. The most common injury was muscular injury/contusion (30.08%), followed by joint sprain (24.92%). The types of sports involving the highest injury rate of neck and trunk, upper limb and lower limb regions were fitness (19.50%), swimming (12.73%), and soccer (23.23%), respectively. Table 3 represented the injury rates of each body regions with regard to sports branch.

The MA group consisted of patients with a majority of male gender (62.72%), and a mean age of 27.24±10.08 (12-59) years. Most of the patients were in the age group of 19-50 years (68.64%) (Table 1). The distribution of admitting reasons in MA group by advice on supplement use, type of sports selection or sports nutrition was shown in Figure 3. Advice on supplement use was the most common reason of admission in the MA group (60.35%). No admission of exercise prescription for chronic disease was recorded.

Table 3. The injured body regions with regard to sports branch.

Type of sports	Neck and trunk, n (%)	Upper limb, n (%)	Lower limb, n (%)
American football	37 (7.14%)	33 (4.72%)	5 (0.57%)
Archery	14 (2.70%)	42 (6.01%)	13 (1.49%)
Basketball	3 (0.58%)	68 (9.73%)	83 (9.50%)
Body-building	54 (10.43%)	51 (7.30%)	63 (7.21%)
Cycling	7 (1.35%)	3 (0.43%)	47 (5.38%)
Dance and ballet	2 (0.39%)	2 (0.29%)	28 (3.20%)
Fitness	101 (19.50%)	66 (9.44%)	106 (12.13%)
Gymnastics	34 (6.56%)	44 (6.29%)	3 (0.34%)
Handball	7 (1.35%)	11 (1.57%)	17 (1.94%)
Martial arts	2 (0.39%)	12 (1.72%)	13 (1.49%)
Parkour	11 (2.12%)	20 (2.86%)	83 (9.50%)
Pentathlon	14 (2.70%)	19 (2.72%)	21 (2.40%)
Playing musical instrument	0 (0)	6 (0.86%)	0 (0)
Soccer	2 (0.39%)	16 (2.29%)	203 (23.23%)
Swimming	41 (7.92%)	89 (12.73%)	19 (2.17%)
Tennis	18 (3.47%)	29 (4.15%)	20 (2.29%)
Volleyball	32 (6.18%)	33 (4.72%)	29 (3.32%)
Weightlifting	39 (7.53%)	69 (9.87%)	7 (0.80%)
Wrestling	11 (2.12%)	15 (2.14%)	10 (1.14%)
Yoga and Pilates	89 (17.18%)	71 (10.16%)	104 (11.90%)

n: number of patients; %: the percentage value considering the patient number classified in each body region

The MDMA group consisted of patients with a high rate of female gender (63.43%), and a mean age of 53.14±21.48 (23-82) years. The patients with the age of ≥51 years were in a majority (64.18%) (Table 1). Most of the patients were the misadmitted ones with a rate of 53.23% (n=214), and the remaining misdirected patients were the other 46.77% (n=188) of the MDMA group.

DISCUSSION

This retrospective study presented the current snapshot of PAs to a SMOC within a 1-year period, and is also the first to evaluate the demographic and clinical characteristics of the post-pandemic daily life in the literature so far. The inspection of literature disclosed the rarity of similar reports in the pre-pandemic period; thus, a specific comparison is somewhat difficult.

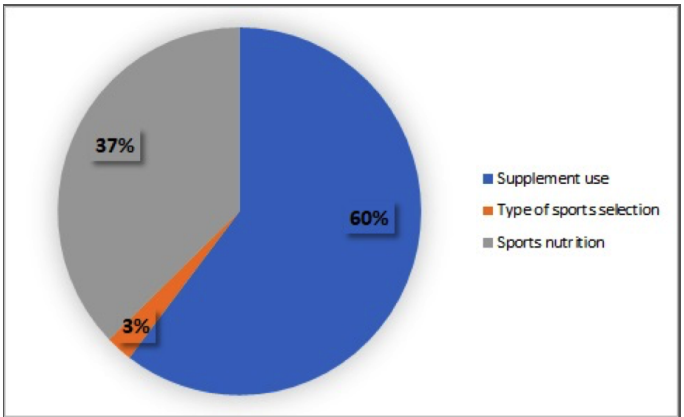

Figure 3. The distribution of medical advice group by advice on supplement use, type of sports selection or sports nutrition.

Evaluation of the total PAs

The total number of PAs of this study was superior to the previous ones which observed the admissions of only athletes (10), only sedentary individuals (9) and both of them (1) to the SMOC. In 2017, Tahirbegolli et al. reported that the athletes tend to admit to other outpatient clinics including emergency departments, and mostly require the reference of physicians and/or physiotherapists to prefer the SMOCs (10). The perception of SMOC may have increased over time among athletes, leading to the rise of PAs. At this point, the effect of pandemic should not be ignored.

A considerable heterogeneity of the sample group was observed in terms of age, injury types and involved body regions, and the type of sports alike previous studies (1,10). The fundamental findings of this study remarked the predominance of male gender and ages of ≤18 years with the reason of SI among the overall PAs. Regarding the ratio of genders, the current findings concurred with the studies examining the PAs not only to the SMOC (1,9,10), but also to the Department of Orthopedics and Traumatology which deals with musculoskeletal diseases (8,14). The excess of male individuals in participation to sports (9) and thus increased exposure to risk factors (8) have been reported as the possible causes, which may be valid for this study. However, the findings of this research were in conflict with the others

considering the age group (8,9,14). The noteworthy increase of younger patients in this study might be related to the negative effects of lockdown due to pandemic, and so increased awareness of sports and SMOCs. However, the lack of pre-pandemic data regarding this SMOC restrains an accurate sense. A recent pre-pandemic study has reported PPS as the most common reason of PAs to SMOC unlike the current study (1). Although the present PPS findings did not show an underestimated value (35.87%), the considerable difference of admission reasons arise from the infrastructural diversity of SMOCs (10).

While evaluating the distribution of PAs among months, the current study delivered a significant reduction of both total PAs and each group separately in August. The probable causes of these findings might be ~~as~~ the summer holiday of public and vacation schedule of the sole Sports Medicine expert. The most common admitted month was September considering the total PAs and groups except PPS, of which was June. A study has declared that the most PPS admissions to SMOC were in winter (1). However, the majority of ≤18-year-old patients in the PPS group of the present study might express the summer sporting events of children during holiday. One other study in which the epidemiologic information and anterior cruciate ligament injury characteristics of Turkish Super League of footballers were observed during ten seasons has reported that August was the month of most common Pas due to injury (15). Those findings might explain the current SI admissions of September to some extent. Another study figuring the PAs to a SMOC for SI has stated the increase in April and concluded the late-season exhaustion of soccer players (10). However, the present findings were more likely related to the SI at the beginning of the season.

Evaluation of the PPS group

The present study revealed the excess of initial PPS admissions in comparison with the periodic evaluations, pointing out the increased participation to sports throughout society. The sparsity of knowledge about the trends in PPS hinders a clear inference, but the pandemic somehow may have affected the process. A previous report has analyzed that university students maintaining a healthy lifestyle 12 months before the pandemic had a significantly increased physical activity level within the second year of pandemic (5). Thus a probable incentive effect of the pandemic on sports participation can be mentioned, especially on physically active individuals.

The current data of PPS also showed that soccer was the most preferred type of sports among both newcomer and ongoing licensed athletes followed by basketball. These findings are consistent with the other study evaluating the PAs to SMOC (1).

Evaluation of the SI group

The SI group of this study involved a majority of young adults, confirming the admissions of younger aged populations to in comparison with outpatient clinics of other departments (10). Even though the admissions of older aged populations for SI is increasing (10), the minority of ~~the~~ patients aged over 50 years in the SI group of this study might be related with the location of this SMOC in the Hospital of Physical Medicine and Rehabilitation. The patients of this population are generally followed-up by the Departments of Physical Medicine and Rehabilitation with Orthopedics and Traumatology due to senile degenerative joint diseases. Thus, some of the patients may have admitted to these departments before the SMOC.

Considering the overall SI group, knee joint was the most common injured body area, which was a consistent finding with the other reports (1,9,10). A study in which the annual PAs to a SMOC were analyzed by similar methods, has declared the most injured body areas as lumbosacral/lumbar spine, shoulder and knee, head and trunk, upper and lower extremities respectively, in line with the present findings (1). Moreover, the muscular strain/tear/rupture and joint/ligament sprain have been reported as the first and second most common injury types in that study, agreeing with the current data (1).

Tahirbegolli et al. have evaluated the athletic profile of patients admitting to the largest SMOC of a university hospital in the most crowded city of Türkiye with regard to public and athletes within a 1-year period, and documented soccer as the foremost injury experiencing type of sports (10). However, fitness was the leading type of sports in the SI group, followed by yoga and Pilates according to the current study. This discrepancy might be partially explained by the difference of population densities of two studies, however the impact of lockdown period due to pandemic should not be either underestimated. Home exercise-based individual trainings with video programs over social media and online communication tools might have taken these types of sports one step ahead.

Another study has compared the injured body regions among the types of sports, and reported that the most frequent injuries of head and trunk, upper and lower extremities were presented in weightlifting, weightlifting, and soccer respectively (1). The findings of the current study agreed with the first place of soccer in the injuries of lower limb, however fitness and swimming drew attention in the injuries of neck and trunk and upper limb, respectively. These inconsistencies might originate from the disparity between

demographic and environmental determinants of the two studies, which have a varying effect on health disorders (8).

Evaluation of the MA group

Only one study evaluated the MA group in the previous literature (1). The further analysis of present MA group revealed that the rate of PAs (4.07%) was about four times more than the findings of the previous study (1.1%) (1), with a majority of male gender and age group of young adults. The current results showed the obvious majority of MA for supplement use, confirming the consumption of dietary supplements in a widely varying ranges up to 100%, especially by male athletes (16). It can be concluded that supplement use has an ever-increasing popularity, thus the need of professional guidance for supplements emerges. The workload of Sports Medicine specialty may increase in this regard.

The absence of PAs for exercise prescription was a surprising finding of this study. One of the reasons might be the intertwined location of SMOC with the outpatient clinics of Physical Medicine and Rehabilitation. Hence, the patients might have taken Sports Medicine for granted and admitted to other outpatient clinics for exercise prescription. A negligence of promoting Sports Medicine in the hospital could be mentioned in this sense. However, Alanko et al. have reported their experiences while developing a Sports and Exercise Medicine clinic for patients with noncommunicable diseases and sedentary lifestyle, and declared that the time of first evaluation of patients was 60 minutes and the periodic evaluations by 3-month-intervals were two hours (17). The working principle of existing SMOC prevents such a detailed evaluation. Thus, the other reason of lacking admission for exercise prescription might be the impossibility of planning individual exercise program. Increasing the number of Sports Medicine experts can be a solving initiative in this respect.

Evaluation of the MDMA group

The unique aspect of this research is the MDMA group, which has a noteworthy rate of 9.69%. The ratios of misdirected patients (53.23%) and misadmitted ones (46.77%) were interestingly almost half, leading to the sense of unmet demands of the patients (12). However, these wasted admissions pose an outstanding burden on several aspects including time, effective working and economy. The elimination of MDMA group could also lead correct patients to reach the correct healthcare.

Raising the awareness of Sports Medicine scope among both patients and physicians of other medical branches is essential. But the impact of defensive medical care among physicians should not be ignored (18). Moreover, the medical guiding system that helps patients to plan the appointment should be revised, and a similar functional referral system should be designed to direct physicians for a correct and quick decision. The need of a professional collaboration among all medical specialties also reveals in the existing era (12).

The perception of exercise has changed for people of all ages by the influence of pandemic, hence the concepts of sports and Sports Medicine have become widespread, leading to a significant rise of PAs to SMOCs (19). The noteworthy increase of sports participation among pediatric population may point out the increased awareness of regular exercising. While this is a requested picture for healthy lifestyle, the workload of musculoskeletal disorders to outpatient clinics evolves as a burden to any hospital (8). Thus, documenting the PAs to the SMOCs periodically may help to determine the prevalence of diseases, screen the trends, and realize glitches in the workflow with the precautions to be taken. Besides, more studies should be designed to present the PAs to other SMOCs processing with different principles.

Limitations and strengths

This study is the first reporting the PAs to a SMOC after pandemic period in the literature so far. However, some limitations should not be overlooked while interpreting the findings. The retrospective nature of study is the first noticeable one, suggesting the bias probability. Besides, the monocentric analysis might limit the generalization of data. Lastly, the lack of pre-pandemic data regarding this SMOC might block a clear interpretation. On the other hand, the providence of healthcare in the SMOC by a sole Sports Medicine expert, and so the single perspective in diagnostic sense add strength to the current study, eliminating the differences of clinical experience and approach among experts. Moreover, all PAs were considered regardless of the reason, enriching the categorization groups, and helping to foresee the faults of-operating processes related to SMOC. The misdirection and misadmission of patients to SMOCs has not been studied in the previous literature.

CONCLUSION

The increasing popularity of sports and associated medical requirements make Sports Medicine a more frequently admitted department. The audit of admissions is a basic stage that should not be ignored, in terms of tracking both the right and wrong practices. This study has emphasized the substantial rate of misdirections and misadmissions to SMOC, not only restricting the admission of patients who require the healthcare of Sports Medicine but also breaking the correct statistical data of PAs. It is recommended to take

some precautions in this regard. Moreover, further studies analyzing the PAs to other SMOCs should be warranted.

Ethics Committee Approval / Etik Komite Onayı

The approval for this study was obtained from Ankara Bilkent City Hospital, No.2 Ethics Committee, Ankara, Türkiye (Decision no: E2-23-3826, Date: 12/04/2023).

Conflict of Interest / Çıkar Çatışması

The authors declared no conflicts of interest with respect to authorship and/or publication of the article.

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Author Contributions / Yazar Katkıları

OK conceived and designed the study, collected and analyzed the data, interpreted the results, and drafted the manuscript.

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