

# The pandemic's effect on discharge against medical advice from the emergency department

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## Ethics Committee Approval

Hitit University Faculty of Medicine Clinical Research Ethics Committee, date February 5, 2020, number 156.

All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

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## Conflict of Interest

No conflict of interest was declared by the authors.

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## Abstract

**Background/Aim:** Reasons for discharge against medical advice (DAMA) may vary according to countries' conditions and environmental or individual factors. Patients who choose to leave the hospital against the doctors' recommendations are at risk of inadequate treatment and increased rehospitalization risk. The COVID-19 disease has come to the fore with a pandemic and the atmosphere of fear and panic it creates. We aimed to investigate the effect of fear of the pandemic on DAMA.

**Methods:** This study was conducted in the emergency department (ED) of a tertiary hospital in Turkey. The characteristics of all patients who were discharged against medical advice and their reasons over six months at the beginning of the pandemic were examined prospectively.

**Results:** A total of 263 patients left the ED on various excuses against medical advice between February 6-August 31, 2020 (DAMA rate: 2.4%). The most common complaint of patients discharged against medical advice was abdominal pain (27%). The top 3 most common causes of DAMA were the fear of being infected by COVID-19 (36.5%), the thought of being neglected (12.2%), and the month of Ramadan (11.4%).

**Conclusion:** The pandemic is an important reason for DAMA. Patients leave the hospital against medical advice with an avoidance-avoidance conflict during the COVID-19 pandemic. Defining dirty and clean areas within the emergency services with sharp boundaries and informing patients may prevent DAMA due to the fear of being infected with COVID-19. Physicians do not ignore the risk of progression to worse clinical outcomes in patients who discontinue treatment due to the pandemic.

**Keywords:** COVID-19, Discharge against medical advice, Emergency department, Pandemic

## Introduction

Discharge against medical advice (DAMA) refers to a condition where the patient leaves the hospital, hence interrupting the diagnosis and treatment process for any reason. DAMA is a confusing ethical problem for physicians. In recent years, concerns about patients with DAMA from the emergency department (ED) have been increasing worldwide. DAMA continues to be a significant problem affecting healthcare quality, with a ratio of 2.7% among ED discharges [1]. Patients who choose to leave the hospital against the doctor's recommendations are at risk of inadequate treatment and increase their rehospitalization risk [2]. Ethical issues regarding DAMA are still a critical dilemma. Although many doctors desire treatment to continue for the patient's benefit, they discharge the patient, respecting the patient's decision [3]. Link et al. [4] found the mortality rate of 57 patients with DAMA in a group of hospitals in the Virginia region to be 15.7% within one year. It has been reported that patients discharged against medical advice have 56% more healthcare costs in their readmissions than in their first admissions [5]. Some conditions that cause patients to request discharge in studies on DAMA are as follows: The patient feels well, socioeconomic conditions, alcohol-substance addiction, and dissatisfaction with health care [6-8].

Months before the coronavirus disease 2019 (COVID-19) pandemic reached Turkey, emergency medicine specialists were trying to raise awareness in their followers through social media posts [9]. Based on these data, it was also investigated whether the pandemic had an impact on DAMA. To the best of our knowledge, there is no study investigating the pandemic's effect on patients who leave the hospital against medical advice.

In this prospective study, we aimed to find solutions to these problems by determining DAMA patients' characteristics, the underlying reasons for the demand for discharge, whether they revisited the ED, their 1-month mortality, and why the doctor avoided discharging the patient in the first place. With this study, we also intended to raise awareness in patients and doctors on this subject.

## Materials and methods

### Study setting and design

This prospective, descriptive, and single-center study was conducted between February 6, 2020, and August 31, 2020, in the ED of a tertiary hospital in Çorum, Turkey. The study's ethics committee approval was obtained from the Hitit University Faculty of Medicine Clinical Research Ethics Committee (Approval ID: 2020/156, February 5, 2020).

The study was conducted in the ED of a tertiary hospital, which admits approximately 300,000 patients per year. Only adult patients aged 18 years and over are treated in this ED. Four to six general practitioners and 1-3 emergency medicine specialists work every day. The following characteristics of all patients with DAMA were examined and recorded over six months: Time of ED presentation, mode of presentation [self-presenting or by an emergency medical service (EMS)], admission complaint, triage code, demographic data (age, gender, comorbidities, place of residence (city/rural area), having health insurance), smoking and alcohol consumption habits,

reasons for DAMA, whether the patient had a previous DAMA history, the reason why the doctor avoided discharging the patient in the first place, the diagnosis at discharge, length of stay in the ED, ED revisit within one month, revisit complaint and 1-month mortality status.

### Selection of participants and measurements

Patients aged 18 years and over who left the hospital against medical advice were included in this study. Informed consent was obtained from each patient before the study. Hospital processes of the patients, such as diagnosis, examination, and treatment, were not intervened. One patient who did not state a reason for DAMA and two patients who did not give written consent were excluded from the study.

ED triage is an essential preliminary screening tool that divides emergency patients into urgency categories to prioritize patients for treatment and evaluation. In Turkey, color coding is used to determine patients' treatment priority admitted to the ED. Patients are divided into three categories according to the severity of their symptoms: Red (emergent), yellow (urgent), and green (nonurgent) [10]. According to this classification, the green code indicates patients without any acute symptoms. The yellow code indicates patients with immediate symptoms but who are not expected to die within hours. In contrast, the red code indicates patients with highly acute symptoms who are likely to die within minutes to hours if not intervened early.

The conditions causing DAMA, as stated by the patients, were grouped under the following subtitles: Fear of being infected with COVID-19 (the first case in our country was detected on March 11, 2020), thought of being neglected, and the Ramadan month effect (patients who are Muslim in our country fast in the 9<sup>th</sup> month of the lunar calendar; the fasting starts before sunrise and ends at sunset, so people who fast often prefer to be at home in the evening), thought of waiting too long, feeling well, dissatisfaction with hospital conditions, avoiding the ED's chaotic environment, conflict with the healthcare staff, the desire to see their own doctor for follow-up, having jobs to catch up on, thought that the family would worry about them, and the desire to smoke.

### Outcome

This study's primary outcomes were to determine both the factors leading to the discharge of patients from the ED against medical advice and DAMA patients' characteristics. The secondary outcome was to examine the ED revisits and one-month mortality of DAMA patients.

### Statistical analysis

Descriptive statistics are presented as numbers and percentages. Continuous variables are presented as medians and minimum-maximum values, and categorical variables are presented as percentages. The normality condition for continuous variables was checked with the Shapiro-Wilk test. Differences between the two groups were analyzed using the Mann-Whitney U test. The relationship between two categorical variables was examined using Pearson's chi-square test and Fisher's exact test. IBM SPSS Statistics for Windows, Version 23 (IBM Corp, Armonk, NY, USA) was used for all statistical analyses. A *P*-value of <0.05 was considered statistically significant.

## Results

Approximately 300,000 patients are admitted annually to the ED, where the study was conducted. The number of ED visits was 111,853 during the study period (36% lower than the number of visits in the same period in the previous year).

Between February and August 2020, a total of 263 patients left the ED on various excuses against medical advice (DAMA rate: 2.4%). The patients' median age was 32 (range: 18-90) years, and 51.7% were females. All patients with DAMA had health insurance. The most common complaints of patients who were discharged against medical advice were abdominal pain (27%), followed by headache (17.9%) and sore throat (16.3%). The most common diagnoses of these patients during their stay in the ED were pharyngitis (16.3%), followed by nonspecific abdominal pain (16%) and migraine (10.3%). It was found that 36.5% of patients with DAMA had histories of DAMA, and 90% of those admitted again within one month were admitted with the same complaint. During the study period, it was observed that *fear of being infected with COVID-19* was the most common reason, with a rate of 36.5% among all cases of DAMA. The second most common reason was *the thought of being neglected*, with 12.2%, while the *sacred month of Ramadan*, in which Muslims fast, was the third most common reason, with a rate of 11.4%. *Uncompleted diagnostic tests and treatment* constituted approximately 95% of why doctors did not discharge the patient (Table 1). No mortality was observed in any of the patients with DAMA within one month.

While patients without comorbidity and alcohol use were more worried about *being infected with COVID-19*, male individuals who smoked and drank alcohol claimed they were *neglected* as a justification for DAMA. Comorbid patients left the hospital to *avoid the ED's chaotic environment* against medical advice. The reasons for the *thought of being neglected* and *avoiding the ED's chaotic environment* were more effective on DAMA as age increased ( $P < 0.05$ ). A detailed comparison of the factors causing DAMA in terms of demographic characteristics is shown in Table 2.

The comparison between DAMA patients' hospital data and the cause of DAMA is as follows: (1) *Fear of being infected with COVID-19*: green code triage, no previous DAMA history, no emergency room revisit; (2) *Thought of being neglected*: Self-presenting, yellow code triage, no ED revisit, presenting between 18:00-23:59; (3) *The Ramadan month effect*: green code triage, no previous DAMA history; (4) *Feeling well*: self-presenting, yellow code triage, no ED revisit; (5) *Dissatisfaction with the hospital conditions*: self-presenting, admitted between 12:00-17:59, no previous DAMA history; and (6) *Avoiding the ED's chaotic environment*: self-presenting, yellow code triage, length of stay in the ED >1 hour, no ED revisit ( $P < 0.05$ ) (Table 3).

Table 1: The distribution of DAMA patients' characteristics, their reasons for leaving the hospital, their hospital processes, and ED revisits

Characteristics	n	%	Complaints	n	%	The reasons for DAMA	n	%
Age (years)	32		Abdominal pain	71	27.0	The fear of being infected with COVID-19	96	36.5
Female	136	51.7	Headache	47	17.9	The thought of being neglected	32	12.2
Place of residence			Throat ache	43	16.3	Month of Ramadan effect	30	11.4
City center	254	96.6	Nausea	24	9.1	The thought of being awaited too long	23	8.7
District	9	3.4	Fall	22	8.4	Feeling well	20	7.6
Health insurance			Syncopal	19	7.2	Dissatisfaction with hospital conditions	16	6.1
General	260	98.9	Chest pain	14	5.3	Avoiding the ED's chaotic environment	14	5.3
Private	3	1.1	Shortness of breath	9	3.4	Conflict with the healthcare staff	10	3.8
Known disease	42	16.0	Assault	3	1.1	The desire of seeing own doctor	9	3.4
Comorbidities**			Dizziness	2	0.8	Having jobs to catch up	6	2.3
COPD <sup>a</sup>	8	3.0	General condition disorder	2	0.8	The thought that the family will worry about	4	1.5
Hypertension	34	12.9	Seven other complaints <sup>d</sup>	7	2.7	The desire for smoking	3	1.1
Diabetes	6	2.3	Diagnosis			Why doctors are against it?		
CAD <sup>b</sup>	11	4.2	Pharyngitis	43	16.3	Uncompleted of diagnostic tests	166	63.1
Malignancy	1	0.4	Nonspecific abdominal pain	42	16.0	Uncompleted of treatment	82	31.2
CRF <sup>c</sup>	3	1.1	Migraine	27	10.3	Clinical instability	8	3.0
Cirrhosis	3	1.1	Soft tissue trauma	21	8.0	Desire to keep under observation for a while	6	2.3
Stroke	3	1.1	Renal colic	20	7.6	Feeling of his efforts being wasted	1	0.4
Smoking	97	36.9	Hypertension	20	7.6	Length of stay in the ED (hours)		
Alcohol use	62	23.6	Vertigo	19	7.2	1 or less	179	68.1
Admission time			Acute coronary syndrome	16	6.1	>1	84	31.9
00:00-05:59	8	3.0	Urinary tract infection	16	6.1	Previous DAMA history (+)	96	36.5
06:00-11:59	47	17.9	Syncopal	10	3.8	ED revisit	21	8.0
12:00-17:59	106	40.3	COPD <sup>a</sup>	8	3.0	ED revisit complaint		
18:00-23:59	102	38.8	Ovarian cyst rupture	4	1.5	Same	19	90.5
Mode of presentation			Trauma to the pregnant	3	1.1	Different	2	9.5
Self-presenting	240	91.3	Excessive alcohol intake	3	1.1	ED revisit period		
By emergency medical service	23	8.7	Stroke	2	0.8	1-7 days	16	76.2
Green Code	180	68.4	Other diagnoses <sup>e</sup>	9	3.4	7-14 day	2	9.5
Yellow Code	83	31.6				15-28 days	3	14.3

\*Median (min-max); \*\* Some patients had more than one comorbidity; <sup>a</sup>COPD: Chronic obstructive pulmonary disease; <sup>b</sup>CAD: Coronary artery disease; <sup>c</sup>CAD: Chronic renal failure; <sup>d</sup> seven complaints: traffic accident, melena, speech impairment, burn, drug overdose, itching, myalgia; <sup>e</sup> other diagnoses: sepsis, intracranial bleeding, acute renal failure, gastrointestinal bleeding, burn, drug intoxication, clavicle fracture, cellulite, urticaria; DAMA: discharge against medical advice; ED: emergency department; COVID-19: coronavirus disease 2019

Table 2: Evaluation of the reasons why patients leave the hospital against medical advice in terms of demographic characteristics

Reasons		Fear of being infected with COVID-19	Thought of being neglected	The Ramadan effect	Thought of being awaited too long	Feeling well	Dissatisfaction with hospital conditions	Avoiding the ED's chaotic environment	Other reasons *
Age, Median (IQR) **	No n Yes n	32 (22) 167 31.5 (19) 96	31 (21) 231 43 (13) 32	32 (21) 233 31 (23) 30	32 (22) 240 32 (19) 23	32 (21) 243 30 (29) 20	32 (21) 247 26.5 (42) 16	32 (20) 249 52.5 (50) 14	-
	P-value	0.358	0.009	0.811	-	0.877	0.527	0.006	-
Gender									
Female (n=136)		57 (41.9)	10 (7.4)	23 (16.9)	8 (5.9)	10 (7.4)	5 (3.7)	8 (5.9)	15(10.9)
Male (n=127)		39 (30.7)	22 (17.3)	7 (5.5)	15 (11.8)	10 (7.9)	11 (8.7)	6 (4.7)	17(13.4)
	P-value	0.059	0.013	0.004	0.089	0.873	0.091	0.676	-
Living place									
City Centre (n=254)		96 (37.8)	32 (12.6)	30 (11.8)	22 (8.7)	17 (6.7)	14 (5.5)	12 (4.7)	31(12.2)
District (n=9)		0 (0)	0 (0)	0 (0)	1 (11.1)	3 (33.3)	2 (22.2)	2 (22.2)	1(11.1)
	P-value	0.124	0.088	0.489	0.704	0.021	0.040	0.004	-
Comorbidity									
Yes (n=221)		89 (40.3)	28 (12.7)	28 (12.7)	19 (8.6)	15 (6.8)	10 (4.5)	6 (2.7)	26(11.7)
No (n=42)		7 (16.7)	4 (9.5)	2 (4.8)	4 (9.5)	5 (11.9)	6 (14.3)	8 (19)	6(14.3)
	P-value	0.004	0.568	0.188	0.771	0.335	0.027	<0.001	-
Smoking									
No (n=166)		58 (34.9)	3 (1.8)	28 (16.9)	18 (10.8)	15 (9)	13 (7.8)	8 (4.8)	23(13.8)
Yes (n=97)		38 (39.2)	29 (29.9)	2 (2.1)	5 (5.2)	5 (5.2)	3 (3.1)	6 (6.2)	9(9.3)
	P-value	0.491	<0.001	<0.001	0.115	0.252	0.121	0.634	-
Alcohol									
No (n=201)		63 (31.3)	14 (7)	29 (14.4)	22 (10.9)	17 (8.5)	14 (7)	13 (6.5)	29(14.4)
Yes (n=62)		33 (53.2)	18 (29)	1 (1.6)	1 (1.6)	3 (4.8)	2 (3.2)	1 (1.6)	3(4.8)
	P-value	0.002	<0.001	0.006	0.023	0.424	0.374	0.199	-

\* The following reasons for DAMA could not be analyzed due to the insufficient sample size: conflict with the healthcare staff, the desire of seeing own doctor, having jobs to catch up, the thought that the family will worry about, the desire for smoking; \*\* IQR: Interquartile range; DAMA: discharge against medical advice; COVID-19: coronavirus disease 2019; ED: emergency department. Categorical variables are given as n (%) in the rows.

Table 3: Evaluation of the reasons why patients leave the hospital despite medical advice according to the factors in the hospital process

Reasons		Fear of being infected with COVID-19	Thought of being neglected	The Ramadan effect	Thought of being awaited too long	Feeling well	Dissatisfaction with hospital conditions	Avoiding the ED's chaotic environment	Other reasons *
Admission time									
00:00-05:59 (n=8)		2 (25)	0 (0)	0 (0)	1 (12.5)	3 (37.5)	0 (0)	2 (25)	0(0)
06:00-11:59 (n=47)		12 (25.5)	9 (19.1)	9 (19.1)	2 (4.3)	3 (6.4)	0 (0)	3 (6.4)	9(19.1)
12:00-17:59 (n=106)		38 (35.8)	17 (16)	13 (12.3)	8 (7.5)	5 (4.7)	12 (11.3)	6 (5.7)	7(6.6)
18:00-23:59 (n=102)		44 (43.1)	6 (5.9)	8 (7.8)	12 (11.8)	9 (8.8)	4 (3.9)	3 (2.9)	16(15.7)
	P-value	0.183	0.037	0.159	0.374	0.030	0.031	0.079	-
Mode of presentation									
Self-presenting (n=240)		91 (37.9)	32 (13.3)	29 (12.1)	22 (9.2)	15 (6.3)	12 (5)	9 (3.8)	30(12.4)
By emergency medical service (n=23)		5 (21.7)	0 (0)	1 (4.3)	1 (4.3)	5 (21.7)	4 (17.4)	5 (21.7)	2(8.6)
	P-value	0.124	0.088	0.489	0.704	0.021	0.040	0.004	-
Triage Area									
Green Code (n=180)		79 (43.9)	30 (16.7)	26 (14.4)	13 (7.2)	6 (3.3)	8 (4.4)	0 (0)	18(10)
Yellow Code (n=83)		17 (20.5)	2 (2.4)	4 (4.8)	10 (12)	14 (16.9)	8 (9.6)	14 (16.9)	14(16.9)
	P-value	<0.001	0.001	0.022	0.198	<0.001	0.101	<0.001	-
Length of stay in the ED (hours)									
1 or less (n=179)		71 (39.7)	24 (13.4)	24 (13.4)	16 (8.9)	11 (6.1)	10 (5.6)	5 (2.8)	18(10.1)
>1 (n=84)		25 (29.8)	8 (9.5)	6 (7.1)	7 (8.3)	9 (10.7)	6 (7.1)	9 (10.7)	14(16.6)
	P-value	0.120	0.369	0.136	0.871	0.192	0.623	0.015	-
Previous DAMA history?									
No (n=167)		73 (43.7)	14 (8.4)	26 (15.6)	15 (9)	13 (7.8)	4 (2.4)	6 (3.6)	16(9.5)
Yes (n=96)		23 (24)	18 (18.8)	4 (4.2)	8 (8.3)	7 (7.3)	12 (12.5)	8 (8.3)	16(18.6)
	P-value	0.001	0.013	0.005	0.858	0.885	0.001	0.099	-
ED revisit									
No (n=242)		95 (39.3)	31 (12.8)	30 (12.4)	21 (8.7)	15 (6.2)	13 (5.4)	9 (3.7)	28(11.5)
Yes (n=21)		1 (4.8)	1 (4.8)	0 (0)	2 (9.5)	5 (23.8)	3 (14.3)	5 (23.8)	4(19)
	P-value	0.002	0.486	0.145	0.704	0.014	0.125	0.002	-

\* The following reasons for DAMA could not be analyzed due to the insufficient sample size: conflict with the healthcare staff, the desire of seeing their own doctor, having jobs to catch up, the thought that the family will worry, the desire for smoking; DAMA: discharge against medical advice; COVID-19: coronavirus disease 2019; ED: emergency department. Categorical variables are given as n (%) in the rows.

## Discussion

The issue of patients deciding to discharge themselves is encountered every day in the ED, and despite its rarity, it carries growing importance. In our study, in which we aimed to reveal the factors that affect DAMA, we found that the pandemic effect and religious beliefs such as fasting and the thought of being neglected were highly influential in the DAMA decision. It was observed that the doctors opposed DAMA at a rate of 95% due to incomplete tests and treatment. The DAMA ratio was 2.4‰ in our study. DAMA's prevalence in the ED has been reported as 0.5-1.44% of admissions [11, 12].

The COVID-19 disease has come to the fore with a pandemic and the atmosphere of fear and panic it creates. The pandemic triggered anxiety and depression and led to behavioral changes [13]. Suggestions made to control the epidemic (social distance rules, curfew restrictions, closing down socializing environments), especially the information burden/pollution caused by social media, make significant contributions to society's tension [14]. One of the aims of this study was to examine whether this tension affected DAMA. It was determined that most patients wanted to be discharged against medical advice due to fear of being infected with COVID-19. Advanced age, comorbid diseases, and male sex are among the risk factors for deaths from COVID-19 [15-18]. However, age and sex were not influencing factors in the decision to leave the hospital due to fear of being infected with COVID-19 in our study.

Contrary to the presence of comorbidities, which are highly associated with COVID-19 mortality, we observed that those without comorbidities left the hospital because they were afraid of being infected with COVID-19. This may be because those with comorbid diseases think that they need more medical support. The fact that green code patients mostly choose DAMA due to COVID-19 supports this view. According to the US data for 2002-2011, lack of social security, male sex, and geographical region (northeast) are the most important triggering factors for DAMA [19]. Noohi et al. [20] stated that the most common cause of DAMA from the ED was feeling well. Eze et al. [21] cited patients' financial reasons and inadequate response to treatment as the most common reasons for DAMA. It was also reported that the presenting symptoms' regression or disappearance was one of the causes of DAMA [22]. Although the reasons for DAMA may vary according to the countries' conditions, based on our data, we concluded that the fear of being infected with COVID-19 was the most prominent cause of DAMA in 2020.

It is strikingly prominent in our study that, as one of the pandemic's hidden effects, patients abandon their treatment halfway through due to the fear of contamination and leave the hospital against medical advice. The pandemic also affects the treatment of patients who are not infected with COVID-19 and should not be ignored. It can be assumed that sick individuals experience an "avoidance-avoidance conflict" due to the anxiety created by the risk of COVID-19 transmission when being admitted to healthcare facilities. Patients who encounter two disadvantageous situations may prefer to interrupt their treatment in this conflict.

Revisits to the ED after DAMA can be considered an indicator of the current clinic's importance and severity. In a study conducted by El Sayed et al. [23] that included 1213 DAMA cases, it was found that 9.8% of the cases revisited the hospital within three days, there was no difference between the urgency in the revisit and the first visit, and 0.3% of patients had mortality within one month (however, they could not learn the fate of half of the patients). Jerrard et al. [22] stated that 34.5% of the patients with DAMA returned to the ED with regressed or ended symptoms, with a rate of 46.2%, and they did not detect any mortality within a month. In our study, 8% of DAMA patients returned to the ED, and 76.2% of these returns were in the first seven days. No mortality was observed within one month. It can be explained that patients with severe symptoms feel the need for revisits, and most DAMA cases have mild symptoms. Only 3% of DAMA patients are defined as critically ill patients by doctors, which supports this view.

It is a known fact that women have difficulties in all areas of life. In previous studies, it was observed that men were more frequently discharged from the hospital against medical advice [19-21]. In Nasir and Babalola's research [24], nearly 4 out of every 5 DAMA patients were male. In our study, 51.7% of DAMA patients were women, and the most common reason for leaving the hospital was Ramadan. During the month of Ramadan, Muslims, who make up almost the entire population of the country, fast. Fasting starts before sunrise and continues until sunset. There is serious food preparation for the ending of the fast at sundown. In almost all societies, women undertake

preparing meals. The fact that women prefer DAMA more often in Ramadan when the food preparation burden is high shows that they also experience difficulties. The effect of Ramadan, which covers a total of 30 days in a working period of approximately six months, ranked third as a cause of DAMA (11.4%). This can be attributed to the patients' inadequate knowledge of which interventions can be performed during fasting and health professionals' inability to explain this issue [25].

Emergency crowds are increasing daily, making it difficult for emergency services to operate effectively. For this reason, triage protocols, in which patients are classified according to their clinical priorities, are practiced in many emergency services [26, 27]. This practice at admission to the ED determines the patients' severity and waiting times and is effective in reducing the ED crowd [27, 28]. Eze et al. [21] reported that most DAMA cases (64.6%) were nonemergency patients. Spooner et al. [19] stated that most DAMA cases were patients presenting with symptoms causing mild and moderate dysfunction (34.6% and 44%, respectively). In the center where this study was conducted, a color code triage system is used to prevent emergency service crowds and provide effective service. The majority of patients with DAMA (68.4%) consisted of patients without serious symptoms (green code). Patients with severe symptoms (yellow code) left the hospital because they felt well and wanted to avoid the ED's chaotic environment.

In contrast, patients with the green triage code left the hospital despite medical advice due to fear of being infected with COVID-19 and the impact of Ramadan. The fact that DAMA is more common in patients with green codes can be attributed to their awareness that their current symptoms are not suitable for ED visits. For patients with mild symptoms not to occupy the ED and be directed electively to the necessary units, smartphone applications with health information lines or clinical decision support systems can be created. In this way, nonchaotic ED environments can be provided for patients with severe symptoms.

The length of stay in the ED is a factor that is affected by many parameters and determines the quality of patient care. While designing the study related to the emergency service, the duration of stay in the ED is also evaluated, as is mortality. This approach aims to determine the issues that need to be considered to prevent mortality and emergency crowding. In the study of Shirani et al. [29], the majority of patients with DAMA stayed in the ED for <12 hours (63%), and only 4.5% of patients had DAMA due to a prolonged stay in the ED. In the study of El Sayed et al. [23] the average length of stay in the ED of DAMA cases was  $3.8 \pm 6.8$  hours, and only 2.9% of the patients indicated a long waiting time as the reason for DAMA. In our study, 8.7% of patients with DAMA left the hospital thinking that they had waited too long. There was no significant difference between the reason and the duration of stay in the ED.

Patients brought in by ambulance are often expected to have severe symptoms. However, 8.7% of DAMA cases in our study were admitted by ambulance, and most (n=21, 91.3%) were green code patients. Unlike the patients brought by ambulance, self-presenting patients cited feeling well, not being satisfied with the hospital conditions, and avoiding the ED's chaotic environment as their reasons for DAMA. As mentioned

before, this difference can be explained by the fact that patients who need treatment know their well-being status and continue their treatment demands.

### Limitations

The first limitation of this study was that it was performed in a single center. Second, there was no information about whether DAMA patients who left our hospital applied to another hospital. The third limitation was the lack of cost analysis. Fourth, we did not have data to compare the DAMA rate at the time of the study with the same period of previous years. Finally, the long-term outcomes of patients with DAMA were not examined.

### Conclusion

The pandemic effect has also manifested itself in DAMA. This study calls not to ignore the risk of later progression to worse clinical outcomes in patients who discontinue treatment due to the pandemic. Patients leave the hospital against medical advice with an avoidance-avoidance conflict during the COVID-19 pandemic. Defining the dirty-clean areas of emergency services with sharp boundaries and informing patients may prevent DAMA due to the fear of being infected with COVID-19. Also, physicians should keep in mind that people's religious feelings in the regions where they work may play a role in refusing or accepting treatment.

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