Imad Khojah et al. Saudi J Er Med. 2025;6(2):103-108
DOI: 10.24911/SJEMed.72-1735370879

ORIGINAL ARTICLE

Factors influencing discharge against medical advice in an emergency department in Saudi Arabia

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ABSTRACT

Background: Discharge against medical advice (DAMA) impacts patient morbidity and mortality, with prevalence rates ranging from 0.76% to 4.01% of hospital admissions. This study investigated DAMA within the emergency department (ED) of a Saudi Arabian hospital, aiming to understand its prevalence and associated factors.

Methods: A retrospective cohort study was conducted from January to December 2022 at a tertiary center. Demographic and clinical data on DAMA cases, including age, gender, nationality, marital status, admission details, diagnosis category, priority level, and reasons for DAMA, were extracted from the electronic hospital database. Descriptive statistics and the chi-square test were used for analysis.

Results: Of the 515 identified DAMA cases, 309 were analyzed after exclusions. The majority of patients were female (52.1%), Saudi nationals (82.5%), and married (38.8%). The most frequent discharge diagnoses involved cardiology (18.1%), obstetrics and gynecology (17.8%), and neurology (14.2%). Common reasons for DAMA were refusal of the physician's plan (40.1%), refusal of admission (21.7%), and long waiting times (13.9%). Significant associations were found between reasons for DAMA and priority levels.

Conclusion: The study highlights the multifaceted nature of DAMA in the ED, which is driven by systemic, cultural, and individual factors. Addressing these issues through improved communication, policy adjustments, and patient education could help reduce DAMA incidence. Future research should aim to overcome this study's limitations, such as its retrospective design's low depth of insight, and limited generalizability, given its single-institution scope.

Keywords: Emergency department, patient discharge, discharge against medical advice, patient care, personal autonomy.

Introduction

Patient autonomy, with its emphasis on the right of competent adults to make informed decisions about their medical care, has transformed and challenged medical practice and clinical research [1]. Discharge against medical advice (DAMA) refers to the patient's decision to leave the hospital against the physician's recommendation or without completing the care regimen. The reported prevalence of DAMA in emergency department (ED) admissions varies significantly, with rates between 0.07% and 27% [2–4]. DAMA places patients at an increased risk of morbidity and mortality, underscoring its global significance within ED settings [2,5].

In the ED, DAMA cases fall into two categories: patients who depart before completing treatment and those who leave while waiting for hospital admission [6]. Typically, these patients are men of a younger age who are likely to leave during specific holidays or weekdays and have

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Received: 28 December 2024 | **Accepted**: 18 March 2025

previously signed a DAMA form at least once [7,6]. A case-control study in a hospital in the Eastern Province of Saudi Arabia, involving 648 DAMA cases (4.01%), revealed a higher prevalence of DAMA among Saudi patients, possibly due to the support available from other government hospitals or centers [7].

International studies have identified a complex array of factors influencing DAMA decisions. In a prospective study conducted in the ED of a Bahraini hospital in 2019, key reasons for DAMA included operation refusal, extended waiting times, perceived improvement, and family obligations, such as childcare [6]. In West Africa, DAMA was linked to a preference for herbal treatment, financial challenges, fear of medical interventions, and domestic issues [4]. Similarly, a study of 91 DAMA cases in India highlighted financial and personal reasons as the predominant influencing factors [8].

Patients who sign DAMA forms have a heightened risk of both morbidity and mortality [2]. A study involving general medical admissions found that 69% of DAMA patients were readmitted within 90 days, and DAMA patients were seven times more likely to be readmitted within 15 days for the same initial diagnosis compared to routinely discharged patients [9]. In the ED, DAMA patients experienced a 40% higher readmission rate than patients who completed their treatment in the hospital [6]. A 90-day follow-up study with 100 DAMA patients from the critical care unit reported a mortality rate of 62%, with the percentage of survivors dropping to 14% [5]. Attending physicians may find it challenging to balance their commitment to patient well-being with honoring patient preferences [1]. This dilemma affects both patients and healthcare providers, but this common problem may be addressed by managing the main reasons for DAMA.

To our knowledge, research on this issue in Saudi Arabian EDs is limited [3]. It remains unclear whether the rates and causes of DAMA in Saudi EDs align with those observed in other global healthcare facilities. Hence, this study aimed to explore the prevalence of DAMA and its associated factors in the ED of a teaching hospital in Saudi Arabia from January 2022 to December 2022.

Materials and Methods

Study design, setting, and population

A retrospective cohort study was conducted to analyze factors associated with DAMA in a teaching tertiary center with over 850 beds. Data were obtained from the electronic hospital database, focusing on discharge data from January to December 2022. The ED at the hospital, housing approximately 70 beds with diverse facilities, served as the study setting. The study included all patients discharged from the ED with DAMA except individuals aged 18 years or below and those who died during their hospital stay. DAMA patients were defined as individuals who signed a standard informed consent form acknowledging self-discharge against professional advice or those who left the hospital in an unplanned manner. Two sets of data were collected for analysis: demographic information (age, gender, nationality, and marital status) and clinical information (admission date and time, diagnosis category, priority level based on the Canadian Triage and Acuity Scale [CTAS], and reason for DAMA). Written informed consent was not necessary because no patient data have been included in the paper.

Data entry and analysis

The collected data were filtered, coded using Microsoft Excel, and then entered into IBM® SPSS® version 21 for statistical analysis. Descriptive statistics for categorical variables were calculated as frequencies and percentages, while quantitative variables, such as age, were reported as means and standard deviations. Chi-square analysis was used for significance testing, with the significance level set at a 95% confidence interval and a p-value below 0.05. The findings were presented using percentages and frequency tables.

Result

During the study period, a total of 54,211 ED visits took place, with 515 cases involving DAMA patients. Of these, 80 cases involved patients under 18 years old, and 126 files were incomplete, resulting in a final sample of 309 cases.

Table 1. *Demographic and clinical characteristics of all DAMA patients from a university-affiliated teaching hospital in the Western Province, Saudi Arabia, during 2021–2022 (N = 309).*

Demographics	N	Frequency (%)
Gender		
Female	161	52.1
Male	148	47.9
Nationality		
Saudi	255	82.5
Non-Saudi	54	17.5
Marital status		
Single	31	10
Married	120	38.8
Divorced	3	1
Unknown	157	50.2
Priority level		
Priority 1 - Resuscitation	6	1.9
Priority 2 - Emergent	79	25.6
Priority 3 - Urgent	181	58.6
Priority 4 - Less urgent	43	13.9
Eligibility for treatment in hospital	294	95.1
Yes	15	4.9
No		
Day of visit		
Sunday	49	15.9
Monday	36	11.7
Tuesday	40	12.9
Wednesday	39	12.6
Thursday	46	14.9
Friday	48	15.5
Saturday	51	16.5
Time of visit		
00:01 - 06:00	69	22.3
06:01 - 12:00	66	21.4
12:01 - 18:00	80	25.9
18:01 - 00:00	94	30.4

Patient characteristics

The characteristics of all DAMA patients during the study period are presented in Table 1. The mean age was 46.89 ± 19.169 years, and the majority (52.1%) were women. Most of the patients were Saudi (82.5%) and married (38.8%). Most patients (58.6%) were at priority level 3, followed by priority level 2 (25.6%). Approximately 4.9% of patients were not eligible for treatment in the hospital. About 68% of DAMA patients came to the ED on a weekday, while 32% were seen on a weekend (in Saudi Arabia, the weekend is on Friday and Saturday), with the most common days being Saturday (16.5%) and Sunday (15.9%). The presenting time to ED was evenly distributed between the following four timeslots: midnight to 6 am (22.3%), 6:00 am to 12:00 pm (21.4%), 12:00 pm to 6:00 pm (25.9%), and 6:00 pm to midnight (30.4%).

Consulting team at discharge for DAMA patients

The consulting team at discharge was analyzed per specialty, as shown in Table 2, with cardiology being the most common (18.1%), followed by obstetrics and gynecology (17.8%) and neurology (14.2%).

Reasons for DAMA

The reasons for DAMA in the ED are listed in Table 3, with the most common being refusal of the physician plan (40.1%). It is important to note that the plan could involve further laboratory investigations, radiological imaging, or treatment. Other reasons included refusal of admission (21.7%), followed by long waiting times (13.9%) - referring to patients already assessed and awaiting inpatient or ICU admission, not initial evaluation - seeking another medical opinion (9.1%), and subjective improvement with treatment (5.8%). The least common reasons were holidays and dissatisfaction with medical care (0.3% each).

The analysis of the association between the most common reasons for DAMA and the details of ED visits revealed both significant and non-significant findings (Table 4). A significant association was observed between refusal

Table 2. *List of the consulting team at discharge and their frequency among DAMA patients (N = 309).*

Diagnosis specialty	N	Frequency (%)
Gastrointestinal	44	14.2
Cardiology	56	18.1
Surgical	31	10
Obstetrics and gynecology	55	17.8
Infectious disease	14	4.5
Neurology	44	14.2
Urology	4	1.3
Musculoskeletal (non-traumatic)	7	2.3
Pulmonology	18	5.8
Nephrology	8	2.6
Hematology	11	3.6
Metabolic and endocrine	6	1.9
Otorhinolaryngology	2	0.6
Toxicology	3	1
Immunology	2	0.6
Psychiatry	4	1.3

Table 3. *List of reasons for leaving by DAMA patients (N = 309).*

Reasons	N	Frequency (%)
Refusal of plan (investigation / procedure)	124	40.1
Long waiting time	43	13.9
Subjective improvement with treatment	18	5.8
Family problems / children at home	14	4.5
Seeking another medical opinion	28	9.1
Holiday	1	0.3
Dissatisfaction with medical care	1	0.3
Urgent non-related appointment	6	1.9
Refusal of admission to the ward	67	21.7
Unnoticed exit	7	2.3

Table 4. *Association of most common reasons for DAMA with their visit details to the ED.*

	Refusal of plan	Refusal of admission to the ward	Long waiting time	Seeking another medical opinion
Priority level:				
Priority 1 - Resuscitation	2 (0.6%)	2 (0.6%)	0 (0%)	0 (0%)
Priority 2 - Emergent	29 (9.4%)	25 (8.1%)	6 (1.9%)	9 (2.9%)
Priority 3 - Urgent	70 (22.7%)	35 (11.3%)	32 (10.4%)	17 (5.5%)
Priority 4 - Less urgent	23 (7.4%)	5 (1.6%)	5 (1.6%)	2 (0.6%)
p-value	0.281	**0.033**	0.141	0.662
Day of visit:				
Sunday	24 (7.8%)	9 (2.9%)	6 (1.9%)	2 (0.6%)
Monday	11 (3.6%)	7 (2.3%)	8 (2.6%)	5 (1.6%)
Tuesday	17 (5.5%)	9 (2.9%)	4 (1.4%)	4 (1.3%)
Wednesday	12 (3.9%)	8 (2.6%)	7 (2.3%)	3 (1%)
Thursday	17 (5.5%)	14 (4.5%)	4 (1.3%)	2 (0.6%)
Friday	22 (7.1%)	7 (2.3%)	8 (2.6%)	4 (1.3%)
Saturday	21 (6.8%)	13 (4.2%)	6 (1.9%)	8 (2.6%)
p- value	0.499	0.622	0.573	0.374
Time of visit:				
00:01 - 06:00	31 (10%)	13 (4.2%)	11 (3.6%)	6 (1.9%)
06:01 - 12:00	24 (7.8%)	11 (3.6%)	14 (4.5%)	7 (2.3%)
12:01 - 18:00	38 (12.3%)	20 (6.5%)	8 (2.6%)	5 (1.6%)
18:01 - 00:00	31 (10%)	23 (7.4%)	10 (3.2%)	10 (3.2%)
p-value	0.182	0.521	0.169	0.740

A significant association was observed between refusal of admission to the ward and priority levels (*p* value = 0.033), indicating that patients with different triage priority levels were not equally likely to be admitted, which may reflect variations in clinical decision-making or resource allocation.

of admission to the ward and priority levels (p-value = 0.033). However, other factors, such as refusal of the plan, long waiting times, and seeking another medical opinion, did not show any significant associations, with p-values of 0.281, 0.141, and 0.662, respectively. Borderline associations were observed between the patient's nationality and their reasons for DAMA (p-value = 0.0481). The p-value for the association between time of visit and reasons for DAMA was 0.5788. Given the conventional significance level of 0.05, this suggests that the decision to leave the hospital against medical advice is not significantly influenced by the time of day the patient visited the hospital. Similarly, age, gender, eligibility, discharge diagnosis, and day of visit had no significant impact on reasons for DAMA.

Discussion

Our study explored the prevalence of factors associated with DAMA in the ED of a teaching hospital in Saudi Arabia. Consistent with previous research, our findings underscore the complexity of DAMA, which presents as a multifaceted issue intertwined with cultural, socioeconomic, and healthcare system-related factors. Our study identified a DAMA rate of 0.95% within the study period, slightly higher than reports from other regions, such as the United States and the United Kingdom (0.68% and 0.73%, respectively) [10-13]. This difference might be attributed to cultural, systemic, or policy differences in healthcare systems. The proportion of women who requested DAMA was higher than that of men, at 52%. This can be attributed to the fact that obstetrics and gynecology was the second most frequent diagnosis specialty in our study, accounting for 17.8% of DAMA diagnoses. Similarly, another Saudi study reported that 70.3% of all DAMA patients were women [3]. Conversely, other researchers have indicated that men outnumber women among DAMA patients [10-13], with alcohol use being one of the most significant contributing factors in these studies. The ban on alcohol consumption by the Saudi Arabian government prevented this from being a significant contributing variable in our study. Most DAMA patients (58.6%) were classified as priority level 3 or less urgent, according to the triage levels 1-4 (resuscitation, emergent, urgent, and less urgent). These findings are consistent with another study [6]. However, their triage protocol adhered to the Manchester Triage Scale rather than the CTAS, which we employed in our study.

In our population, the financial burden was not a significant factor. This might be because support is available from other free government hospitals or centers for all Saudi nationals and eligible non-Saudi nationals. Complete care is available to these individuals through hospitals, clinics, and outpatient facilities, and Saudi citizens made up 95% of the DAMA patients who qualified for care. In contrast, a hospital in Pakistan contended that financial and insurance-related factors significantly influenced the patient's decision to depart against medical advice [14]. Our results also align with previous findings regarding time of admission, with the most frequent presenting time among DAMA patients being 6:00 pm to midnight (30.4%), followed by 12:00 pm to 6:00 pm (25.9%) [6].

Additionally, as illustrated in Table 2, our research revealed that DAMA differed based on the diagnosis within each specialty. The most prevalent specialty was cardiology (18.1%), followed by obstetrics and gynecology (17.8%) and then neurology (14.2%). Chest pain, which may not be cardiac in nature, could be the reason for cardiology being the most prevalent specialty, necessitating further testing and time. This type of pain is also associated with a longer and more thorough ED workup, which can involve repeated cardiac enzyme testing or imaging techniques such as computed tomography scans, resulting in an extended waiting period that could prompt the patient to sign a DAMA form. The second most prevalent diagnosis specialty was in obstetrics. This may be related to certain women's preferences based on Islamic culture and the hospital's educational environment, due to which they might object to being treated by a male doctor or in the presence of medical students. However, according to other overseas studies, the specialties most frequently associated with DAMA were gastroenterology and cardiology [6,15,16].

In our study, the primary reason for DAMA in the ED was refusal of the physician's plan (40.1%), while a study from the Kingdom of Bahrain reported a 23.2% refusal rate for procedures or operations [6]. Furthermore, research from a university hospital in Turkey revealed that 16.8% of DAMA cases were due to refusal of intervention [17]. Expanding on this, a study in China examined the importance of communication, highlighting three key factors: a thorough description of protocols and procedures, clinician-patient and clinician-clinician interactions, and contextual considerations, such as time constraints, that might influence a patient's decision to follow a medically advised plan [18]. Another study indicated that the amount and quality of information received by a patient can mitigate negative emotions such as stress, fear, or irritation, encouraging patients to remain in the ED to receive necessary care and thus minimizing DAMA rates [19]. Our results showed that the second most common reason for DAMA was refusal of admission, accounting for 21.7%. In contrast, a study in Istanbul found that 34.6% of DAMA patients refused observation or admission, mainly due to inadequate medical insurance [17]. Studies have also suggested that refusal of admission or hospitalization could be linked to other reasons, such as patients with less urgent or non-urgent conditions leaving the ED more frequently. However, even patients with potentially emergent or life-threatening conditions have been shown to leave [16,20]. Other reasons, including seeking another medical opinion, subjective improvement with treatment, and family obligations or childcare needs, were less common than in other studies [6,15]. The third most prevalent reason for DAMA was long ED waiting times (13.9%), with other studies reporting rates of 0% to 18.7% [15,17]. This issue may be related to delays in laboratory results or radiology reports, availability of beds in the ED, specialized consultations, the admission process, and treatment delays [6]. Carron et al. [21] also noted that long waiting times and ED overcrowding were major contributing factors to patients leaving. Other cited reasons in the literature include conflicts with the medical team and

work or family commitments [21]. The least common reason for DAMA in our study was dissatisfaction with medical care (0.3%), whereas the dissatisfaction rate reached up to 10.3% in some institutions [22].

This study has several limitations. Its retrospective design limits the depth of insights into patients' motivations for DAMA, relying on electronic medical records that may not capture the full complexity of patient decisions. The focus on a single institution may restrict the generalizability of the findings, as cultural, socioeconomic, and healthcare system characteristics might differ widely across settings. Moreover, the study does not delve into the psychological and emotional dimensions of DAMA decisions, potentially overlooking significant factors influencing patient choices. Additionally, the reliance on quantitative data extraction limits its ability to capture the qualitative aspects of patient experiences, possibly underestimating the role of socio-cultural and psychological factors in DAMA scenarios. Addressing these limitations in future research is essential to provide a more comprehensive understanding of DAMA that can contribute to the development of more effective interventions to reduce its occurrence, ultimately improving patient healthcare outcomes.

In conclusion, this study focused on 309 DAMA cases, highlighting a predominant representation of women (52.1%), Saudi nationals (82.5%), and married individuals (38.8%). Cardiology (18.1%), obstetrics and gynecology (17.8%), and neurology (14.2%) were the most frequent diagnosis specialties. Primary reasons for DAMA included refusal of the physician's plan (40.1%), refusal of admission (21.7%), and extended waiting times (13.9%), often influenced by priority levels. The findings underscore the intricate interplay of systemic, cultural, and individual factors shaping DAMA in the ED. By addressing the factors identified in our study, healthcare providers and policymakers can work toward reducing the incidence of DAMA, improving patient outcomes, and ensuring the efficient use of healthcare resources.

Acknowledgments
None.

Conflict of interest
The authors declare no conflict of interest.

Consent to participate
Not applicable.

Ethical approval
Ethical Approval was granted by the Ethical Research Committee, and permission was obtained from the Institutional Review Board (IRB) on Thursday, November 9, 2023 (Reference No. 592-23).

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