European Review for Medical and Pharmacological Sciences 2024; 28: 1976-1986

Negative outcomes pertaining to patients that leave against medical advice: a systematic review and meta-analysis

F. ABUGUYAN

Department of Emergency Medicine, College of Medicine, King Saud University, Riyadh, Saudi Arabia

Abstract. – OBJECTIVE: Leaving Against Medical Advice (LAMA) is a prevalent issue in healthcare settings that may lead to negative patient outcomes. We conducted a systematic review and meta-analysis to assess the impact of LAMA on patient outcomes.

MATERIALS AND METHODS: A comprehensive literature search was performed across PubMed, MEDLINE, Embase, Cochrane Library, CINAHL, PsycINFO, Web of Science, and Scopus. Studies reporting adverse outcomes, including mortality and hospital readmission rates, in patients who underwent LAMA were included. The odds ratios (ORs) with 95% confidence intervals (CIs) were pooled using a random-effects model.

RESULTS: Eight studies were included in the review, with four contributing to the meta-analysis on 1-year mortality and five to the meta-analysis on hospital readmission rates. LAMA was not significantly associated with higher 1-year mortality [OR = 0.66, 95% CI (0.38, 1.16), $p = 0.15$] or hospital readmission rates [OR = 0.61, 95% CI (0.30, 1.23), $p = 0.16$] across the studies. However, there was substantial heterogeneity in the results ($I^2 = 91\%$ for mortality; $I^2 = 99\%$ for readmissions).

CONCLUSIONS: While individual studies reported varying outcomes, the pooled results did not show a significant association between LAMA and increased 1-year mortality or hospital readmission rates. However, the high degree of heterogeneity suggests the influence of diverse patient populations, healthcare settings, and study methodologies on these outcomes. Further research is needed to better understand the factors contributing to the adverse outcomes associated with LAMA and to develop targeted interventions to mitigate them.

Key Words:

Discharge against medical advice, Leaving against medical advice, Mortality, Hospital readmission rates, Environmental factors.

Introduction

Leaving Against Medical Advice (LAMA) is characterized by a patient's decision to exit the hospital environment prior to the official sanction for discharge by their medical team[1]. This phenomenon, displaying an upward trend, presents in approximately 1-2% of total hospital admissions and has implications for both the individual patient and the broader healthcare system[2,3].

LAMA is an important yet relatively understudied issue in healthcare. It involves a situation where patients opt to leave the hospital before their treating physician recommends discharge[4]. This practice poses a significant challenge to healthcare providers globally, given the potential adverse outcomes associated with it, including increased morbidity, mortality, and hospital readmission rates[2,4].

Despite its relevance, the literature on LAMA remains disparate and inconclusive. Previous studies[5] have reported varying rates of LAMA across different settings, ranging from 0.1% to 2.3% of all hospital discharges. Furthermore, these studies exhibited substantial heterogeneity with regard to their findings on the impact of LAMA on patient outcomes. Some reported[6] a significant association between LAMA and increased mortality and hospital readmission rates, while others found no such association.

Several factors have been proposed[7-9] to contribute to LAMA, including patient characteristics (e.g., age, sex, socioeconomic status), disease severity, perceived quality of care, and communication between patients and healthcare providers. However, the exact interplay of these factors remains unclear, and their relative contributions to LAMA and its associated outcomes may vary across different settings.

Corresponding Author: Fahad Abuguyan, MD; e-mail: Fabuguyan@ksu.edu.sa

Such action often results in incomplete medical treatment for the patient, thereby potentially elevating the risk of subsequent hospital readmissions[10,11]. Despite the inherent aversion of healthcare institutions to permit LAMA due to its potential negative outcomes, it has ascended as a prominent challenge in contemporary medical practice[12].

While precise quantification of the overall economic impact on the healthcare system is scarce, the elevated mortality rates and increased hospital readmissions associated with LAMA undoubtedly contribute to financial strain[13]. Concurrently, the medical practitioner is often left grappling with the ethical dilemma of honoring their commitment to prioritize patient welfare while respecting the patient's autonomy[14,15]. This complex issue poses significant challenges to both patients and physicians, necessitating the exploration and implementation of feasible solutions to alleviate its prevalence.

Given the potential public health implications of LAMA, there is an urgent need for a comprehensive and systematic appraisal of the available evidence on this issue. Such an appraisal would help to clarify the association between LAMA and key patient outcomes, identify potential factors contributing to LAMA, and inform strategies to reduce the incidence of LAMA and mitigate its impact on patient outcomes. Therefore, this systematic review and meta-analysis aimed to synthesize the available evidence on the impact of LAMA on negative outcomes that tend to persist in them, namely mortality and hospital readmission rates (HRRs).

Materials and Methods

Research Question

The primary research question for our review was: "What is the impact of Leaving Against Medical Advice (LAMA) on patient outcomes, specifically on 1-year mortality and hospital readmission rates?"

Review Design and Framework

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol[16] was utilized to guide the conduct and reporting of this investigation, with Figure 1 representing the study selection schematics. The PECO (Population, Exposure, Comparator, Outcome) framework employed in the formulation and execution of this systematic review and meta-analysis is provided below.

- The population of interest in this review was composed of adult patients admitted to hospitals.
- The exposure of interest was LAMA. This referred to scenarios where patients chose to leave the hospital before their treating physician recommended discharge.
- The comparator group was composed of patients who followed medical advice and were discharged at their healthcare provider's recommendation.
- The outcomes of interest were 1-year mortality and hospital readmission rates (HRRs).

Database Search

The literature search for this investigation was conducted across PubMed, MEDLINE, Embase, Cochrane Library, CINAHL, PsycINFO, Web of Science, and Scopus. The search strategy was designed to be comprehensive and precise, using a combination of Boolean operators 'AND' and 'OR', along with Medical Subject Headings (MeSH) and free-text keywords. The search protocol was framed around the key elements of the review: the patient population, the exposure (LAMA), and the outcomes of interest (1-year mortality and HRRs). The MeSH terms and keywords used were tailored to each database's controlled vocabulary and search syntax.

Inclusion and Exclusion Criteria

The inclusion criteria were as follows:

1) Studies that focused on adult patients (18 years or older) admitted to hospitals. This age criterion was set to ensure the review focused on the population most likely to make independent decisions about LAMA.
2) Studies that clearly defined LAMA as the exposure of interest.
3) Studies that reported on either or both of the pre-specified outcomes of interest: 1-year mortality and hospital readmission rates.
4) Studies that were published in English.
5) Studies that were peer-reviewed.

Conversely, the exclusion criteria were as follows:

1) Studies involving pediatric patients or focused exclusively on psychiatric patients were excluded, as decision-making processes and outcomes in these populations may be significantly different.

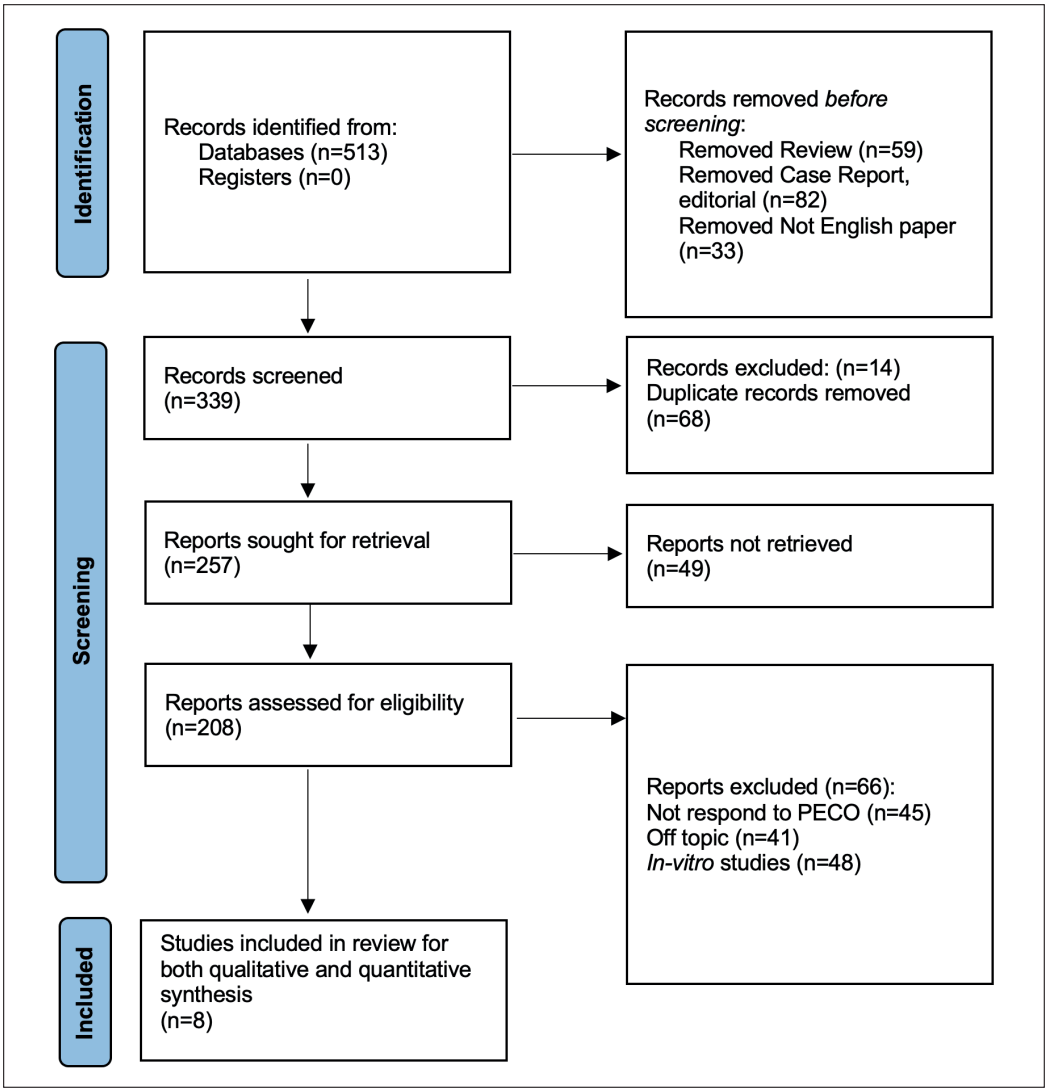

Figure 1. PRISMA protocol representation for this review.

2) Case reports, case series, editorials, commentaries, and letters to the editor were excluded, as these types of articles typically do not provide robust comparative data suitable for a systematic review and meta-analysis.
3) Studies that were not published in English were excluded due to resource and translation constraints.

Variable Extraction Protocol

The data extraction protocol was conducted systematically to ensure a thorough and objective assessment of each study included in the review and the subsequent meta-analysis. A standardized data extraction form was developed prior to the extraction process, which aimed to gather pertinent information about each study, including study design, sample size, population characteristics, definition and measurement (DAM) of outcomes (1-year mortality and hospital readmission rates), and primary results.

Two independent reviewers undertook the data extraction process to minimize bias and human error. Each reviewer independently extracted data from each included study, filling in the standardized form. Any discrepancies between the two reviewers were resolved through discussion and consensus, and when necessary, a third reviewer was consulted for arbitration.

To quantify the level of agreement between the two reviewers during the data extraction process, the interrater reliability was assessed using Cohen's Kappa statistic. This statistic provides a measure of agreement between reviewers that

takes into account the agreement occurring by chance. In the context of this review, a Cohen's Kappa value of 0.85 was achieved, indicating a high level of agreement between the two reviewers. This high value bolstered confidence in the reliability and objectivity of the data extraction process.

Bias Assessment

To assess the risk of bias in the studies included in this investigation, the Newcastle-Ottawa Scale (NOS)[17] was applied.

Statistical Analysis

The Review Manager RevMan 5.3 software Version 5.3. (Review Manager Web, The Cochrane Collaboration, Copenhagen, Denmark) was used to conduct the meta-analysis and generate forest plots for this review. The primary outcomes of interest were 1-year mortality and HRRs in patients who were LAMA compared to those who did not. After the data extraction process, all relevant data were input into the RevMan software. For each study, the number of events (i.e., deaths or hospital readmissions) and the total number of patients in both the LAMA and non-LAMA groups were input. The software then calculated the odds ratios (ORs) for each study, as well as the 95% confidence intervals (CIs) for these ORs. Given the anticipated heterogeneity in the included studies due to differences in study populations, settings, and methods, a random-effects (RE) model was used for the meta-analysis. The RE model assumes that the studies included in the meta-analysis are a random sample of all potential studies and incorporates an additional between-study variance into the calculations. This model provides a more conservative estimate of effect and is more appropriate when there is variation between studies. The p-value <0.05 was considered significant.

Results

Paper Selection Process

In the beginning, a comprehensive search of the literature was conducted, yielding a total of 513 records from various databases. No additional records were identified from the registers. Prior to the formal screening process, we excluded certain records based on predetermined criteria: 59 review articles, 82 records such as case reports and editorials, and 33 non-English papers, leaving 339 records for screening. Subsequently, we removed 68 duplicate records, resulting in 271 unique records for further consideration. The titles and abstracts of these records were screened for relevance, leading to the exclusion of 14 records. Therefore, 257 full-text articles were sought for retrieval. However, 49 of these could not be retrieved, leaving 208 records for full-text assessment.

During the full-text assessment phase, 66 reports were excluded for various reasons: 45 did not respond to the Population, Exposure, Comparator, and Outcome (PECO) criteria, 41 were off-topic, and 48 were in-vitro studies. The total number of exclusions exceeds the number of assessed reports due to some reports being excluded for multiple reasons. Following this process, a total of 8 studies[18-25] met the inclusion criteria and were included in this review.

Demographic Characteristics

The studies under review assessed the profiles and outcomes of patients who underwent LAMA in various regions, including Bahrain, the United Kingdom, Canada, the United States, Pakistan, and Australia, during the period 2003-2023[18-25]. The sample sizes varied significantly across the studies, ranging from 97 in a Canadian study[23] to a large-scale American[21] study involving 32,819 participants.

The participant age and gender distribution also varied across studies. The mean age of participants ranged from 38 years in a Pakistani study[22] to 54.4 years in an American study[21]. Notably, a Bahrain study[18] did not specify participant ages. Gender distributions also varied, with the number of male participants ranging from 78 in the Canadian study[23] to 31,769 in the American study[21]. The methodological approach taken by these studies was either prospective or retrospective in nature. The study[18] conducted in Bahrain was the only one that utilized a prospective protocol, while all others preferred a retrospective design[19-25] (Table I).

Inferences Drawn

The included articles reported various types of adverse outcomes related to LAMA. For instance, Abuzeyad et al[18] found that 20.8% of patients were readmitted to the Emergency Department within 72 hours, with 47.7% of these readmissions associated with morbidity and 2.3% with

Table I. Demographic characteristics of the included papers.

Author	Year	Region assessed	Sample size (n)	Age (in years)	Number of males	Protocol
Abuzeyad et al[18]	2021	Bahrain	413	Unspecified	117	Prospective
Alagappan et al[19]	2023	UK	757	39	498	Retrospective
Choi et al[20]	2011	Canada	328	42.5 ± 12.2	207	Retrospective
Glasgow et al[21]	2010	USA	32,819	54.4	31,769	Retrospective
Hasan et al[22]	2019	Pakistan	429	38	206	Retrospective
Hwang et al[23]	2003	Canada	97	47.1 ± 14.1	78	Retrospective
Southern et al[24]	2012	USA	3,544	48.7 ± 15.4	2,225	Retrospective
Yong et al[25]	2013	Australia	1,562	42.0 ± 17.1	870	Retrospective

mortality. Alagappan et al[19] reported an increased risk of death in LAMA patients under the age of 33.3 years, as well as an increased incidence of 30-day readmission (Table II).

Several studies[21,22] found high readmission rates among LAMA patients, ranging from 17.7%[21] to 34%[22], often within a short period following discharge. These readmissions were frequently associated with worsening or persistence of the same problem or the development of new problems[22]. Additionally, LAMA was consistently associated with higher mortality rates, as observed in multiple studies[19,20,24,25].

Beyond these outcomes, several studies[18,19,22,25] also identified specific patient characteristics associated with LAMA. These included younger

Table II. Inferences related to LAMA, as observed in the selected papers.

Author	Parameters assessed	Assessment period (in years)	Negative outcomes in terms of LAMA observed	Overall inference drawn
Abuzeyad et al[18]	Prevalence, demographic and clinical characteristics, reasons, and clinical outcomes of LAMA patients	1	20.8% were readmitted to the ED within 72 hours of which 47.7% cases were morbidity and 2 (2.3%) were mortality	Marital status was a predictor of LAMA patients who revisit the ED within 72 hours
Alagappan et al[19]	Frequency of LAMA, factors increasing the risk of LAMA, impact of LAMA on patient risk of mortality and readmission	4	LAMA was associated with increased risk of death in patients under the age of 33.3 years and increased incidence of 30-day readmission	LAMA patients were younger, predominantly male, and were of greater social deprivation
Choi et al[20]	Readmission rates and the pattern of readmission among LAMA patients compared to control patients	1 (follow-up period after initial hospitalization)	25.6% of LAMA patients were readmitted by day 14. There was also higher all-cause in-hospital mortality during the 12-month follow-up in the AMA group compared to non-AMA group (6.7% *vs*. 2.4%)	Patients who were LAMA were more likely to be readmitted and had higher in-hospital mortality during the 12-month follow-up
Glasgow et al[21]	30-day hospital readmission and mortality rates for patients who were LAMA; risk factors associated with these outcomes	4	AMA patients had a higher 30-day readmission rate (17.7% *vs*. 11.0%) and higher 30-day mortality rate (0.75% *vs*. 0.61%)	The largest hazard for patients having a 30-day readmission is LAMA patients

Continued

Table II *(Continued)*. Inferences related to LAMA, as observed in the selected papers.

Author	Parameters assessed	Assessment period (in years)	Negative outcomes in terms of LAMA observed	Overall inference drawn
Hasan et al[22]	Rate of LAMA and reasons for the same across different in-patient departments	1	Of the 429 patients, 147 (34%) patients revisited the hospital within 30 days. 61% of these 'bounced-back' LAMA patients had worsening or persistence of same problem, or new problem/s had developed	Patients advised for follow-up during LAMA were four times more likely to revisit the hospital. Married patients had an increased odd of revisiting
Hwang et al[23]	Rates of readmission and predictors of readmission among patients who were LAMA	Unspecified	Patients who were LAMA were much more likely to be readmitted within 15 days (21% *vs.* 3%)	Leaving AMA was the only significant predictor of readmission
Southern et al[24]	30-day mortality, 30-day readmission, and length of stay between discharges against medical advice and planned discharges	1.5	Leaving was associated with higher mortality and 30-day readmission after adjustment. Discharges against medical advice had shorter lengths-of-stay than matched planned discharges (3.37 *vs.* 4.16 days)	LAMA was associated with higher mortality and 30-day readmission, length of stay
Yong et al[25]	Characteristics of patients who LAMA, their rates of readmission and mortality after self-discharge	9	In the study period, 1,562 episodes (1.3%) of 121,986 admissions were LAMA. These patients were younger, more often male, more likely of indigenous ethnicity and had less physical comorbidity, but greater mental health comorbidity. LAMA was associated with 7-day, 28-day and 1-year readmission, and 28-day, 1-year and up-to-9-year mortality	LAMA was associated with increased readmission and mortality

age, male gender, social deprivation[19], and greater mental health comorbidity[25]. Some studies also identified certain predictors of negative outcomes in LAMA patients, such as marital status[18,22] and the advice for follow-up during LAMA[22].

1-year Mortality Rates of LAMA Patients as Compared to non-LAMA

The forest plot displayed in Figure 2 shows the ORs of 1-year mortality in patients who experienced LAMA compared to non-LAMA patients

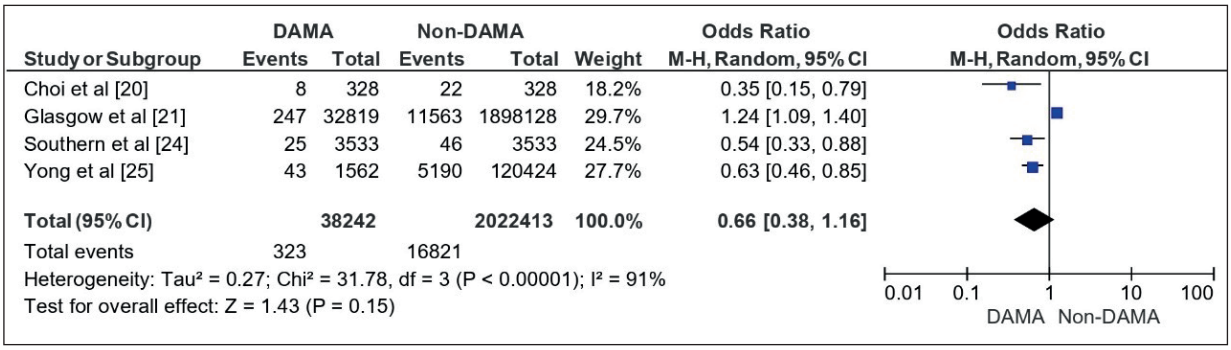

Figure 2. 1-year mortality observed in LAMA patients in comparison to non-LAMA ones.

in four separate studies[20,21,24,25]. While individual studies showed varying directions and magnitudes of effect, the collective evidence did not conclusively demonstrate a significant difference in 1-year mortality between LAMA and non-LAMA patients.

The pooled OR, based on the random-effects model, was 0.66 [95% CI (0.38, 1.16)], indicating a non-significant trend toward lower 1-year mortality in LAMA patients across the studies. However, there was substantial heterogeneity in the results across the included studies, as indicated by an I^2 statistic of 91% and a significant Chi-squared test ($\chi^2 = 31.78$, df = 3, p-value < 0.00001). The Tau^2 value of 0.27 further confirmed the high degree of heterogeneity. This variability suggests that the studies were not measuring the same effect and highlights the influence of different patient populations, healthcare systems, and study methodologies on the outcomes of LAMA. Also, the test for overall effect (Z = 1.43, p-value = 0.15) indicated that the overall pooled effect size was not statistically significant at the conventional 0.05 level.

HRRs of LAMA Patients as Compared to non-LAMA

The forest plot depicted in Figure 3 presents the ORs of HRRs in patients who experienced LAMA compared to non-LAMA patients and was based on five separate studies[20,21,23-25]. While individual studies showed varying degrees and directions of effect, the collective evidence did not conclusively demonstrate a significant difference in hospital readmission rates between LAMA and non-LAMA patients.

The pooled OR, based on the random-effects model, was 0.61 [95% CI (0.30, 1.23)], indicating a non-significant trend towards lower hospital readmission rates in LAMA patients across the studies. However, notable heterogeneity was observed among the studies, as indicated by the I^2 statistic of 99% and a significant Chi-squared test ($\chi^2 = 608.25$, df = 4, p-value < 0.00001). The Tau^2 value of 0.58 further confirmed this high degree of heterogeneity. This implies that the studies were not measuring the same effect due to variations in patient populations, healthcare settings, and study methodologies. Also, the test for overall effect (Z = 1.39, p-value = 0.16) suggested that the overall pooled effect size was not statistically significant at the conventional 0.05 level.

Discussion

Though the literature in this regard is still murky to a certain extent, patients who tend to leave the hospital premises of their own volition may do so due to perceived negative experiences or dissatisfaction with care, which can stem from communication breakdowns, perceived neglect, or frustration with long wait times[13]. These experiences can contribute to a loss of trust in healthcare providers and the broader medical system. Patients may start to question the competence or intentions of healthcare providers, leading to skepticism toward medical advice and reluctance to seek care in the future[2,7].

Additionally, patients who leave against medical advice may feel a sense of disempowerment or lack of autonomy in their care decisions. The medical environment, with its complex terminology and power dynamics, can often be intimidating for patients, making them feel like passive recipients rather than active participants in their care[6,26]. If patients feel their concerns are not adequately addressed, or their preferences are

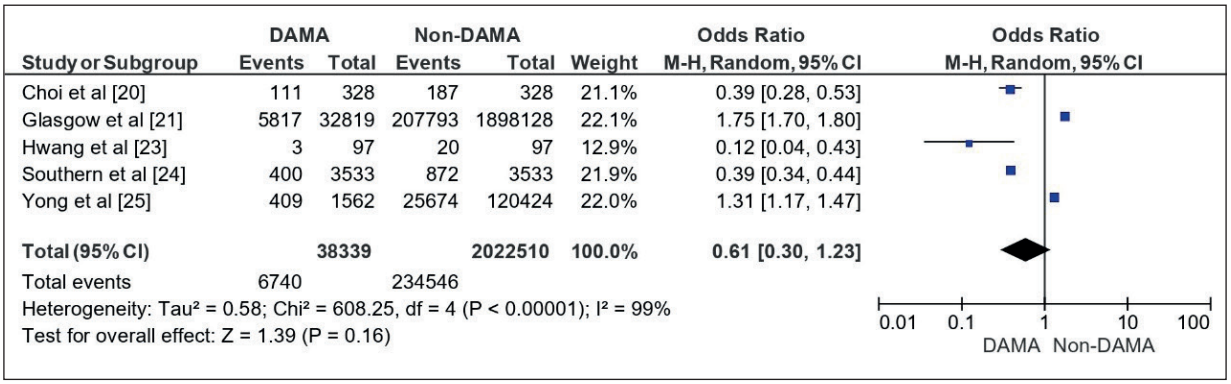

Figure 3. Hospital readmission rates observed in LAMA patients in comparison to non-LAMA ones.

not considered, they may choose to leave against medical advice as a way to assert control over their health decisions. However, this can lead to feelings of isolation or resentment towards the medical domain. Furthermore, the stigma associated with LAMA can also affect patients' morale. Patients who leave against medical advice are often perceived negatively as non-compliant or difficult, which can lead to discriminatory treatment in future healthcare encounters[27-29]. This stigma can exacerbate feelings of guilt or regret associated with the decision to LAMA, further eroding patients' self-esteem and belief in the medical domain.

The obtained findings suggest that the act of LAMA, in and of itself, may not necessarily lead to poorer patient outcomes. However, it is crucial to bear in mind the substantial heterogeneity observed among the included studies. This heterogeneity indicated that the impact of LAMA on patient outcomes likely depended on a variety of factors, including the specific patient population, healthcare setting, and the nature of the illness or condition prompting the initial hospitalization. Moreover, the study's results underscored the necessity for a nuanced understanding of the reasons behind LAMA. The reasons for LAMA are multifactorial and may include factors such as dissatisfaction with care, personal or financial constraints, and beliefs about health and medical care. Understanding these reasons can help healthcare providers to address the root causes of LAMA, potentially reducing its incidence and any associated negative patient outcomes.

Albayati et al[26], in their review, adopted a broader approach in comparison to ours, exploring a range of factors pertaining to LAMA. The factors they examined, such as demography, policy/procedures, disease status, personnel factors, financial difficulties, services/equipment, insurance policies, and hospital performance metrics, differed from our methodology. They also considered factors like the sign and leave policy, underutilization of social support, and leaving against medical advice, which were not explicitly addressed in our review. However, they did not consider conducting a meta-analysis, which was included in our review.

Pasay-An et al[27], on the other hand, conducted descriptive-analytical research in the city of Hail, Saudi Arabia, focusing on 13 patients who chose to leave against medical advice from government-subsidized hospitals' emergency departments. Their research identified five main themes: health literacy, self-diagnosis, unclear explanations about their condition, extended wait times, and communication issues. While the focus of their study was narrower, several themes identified, such as long waiting times and communication issues, resonated with findings from our review and that of Albayati et al[26], reinforcing the cross-cultural applicability of these factors. However, themes such as health literacy and self-diagnosis were unique to their study, suggesting the presence of culturally or context-specific factors that warrant further investigation.

In contrast, Trepanier et al[28] conducted a scoping review that focused on strategies for emergency physicians attending to patients who choose to leave against medical advice. Their methodological approach differed from ours in that they specifically sought literature across a range of fields and methodologies to synthesize optimal strategies for dealing with LAMA. Their search strategy was comprehensive, utilizing a variety of databases and controlled vocabulary. They included case presentations, ethical case analyses, legal letters, reviews, and original studies in their analysis of relevant papers.

Besides the already discussed factors, bureaucratic inefficiencies in discharge procedures have been identified as a cause for patients to depart from hospitals against medical advice[14]. A notable association between LAMA from emergency departments and patients exhibiting neurological symptoms has been observed[28]. The most frequently reported symptoms in these cases were seizures, headaches, and sensory impairments.

Age appears to play a role in LAMA, with individuals aged 30-50 years and those above 70 being more likely to leave the emergency department against medical advice before hospital admission. The study also revealed that a significant proportion of patients (60%) self-presented to the hospital, while one-third were brought in by emergency services[28]. Among the presenting symptoms, seizures and sensory deficits were the most common. Over half of these patients departed before undergoing a physical examination, while 44.5% left after the physical examination and diagnostic procedures indicated a need for admission[29]. Although specific reasons for LAMA were not obtained, expressions of anger and dissatisfaction were identified as potential emotional triggers for such decisions, possibly masking underlying feelings of fear and despair related to their medical conditions. One proposed approach to mitigate the rate of premature dis-

charges is to enhance patient-doctor communication, fostering stronger relationships and promoting shared decision-making in patient care[30].

In a community hospital context, institutions catering to economically disadvantaged populations recorded a higher frequency of AMA discharges[31]. While race was not identified as a significant factor influencing LAMA in various studies, a median household income below $20,000 and being uninsured or covered by Medicaid were associated with an increased likelihood of LAMA[22].

Socioeconomic status has been observed to inversely correlate with LAMA, with higher rates reported in hospitals predominantly serving lower-income populations (2.2%) compared to those serving primarily middle- and upper-income populations (0.8%)[22]. In the United States, socioeconomic status strongly influences the type of health insurance and eligibility for Medicaid. A couple of studies[26,31] have noted a nearly two-fold increase in the likelihood of LAMA among patients without health insurance or related aid. Having financial stability, health insurance, and access to primary care services form a critical foundation for enhanced healthcare. The lack of these factors is often attributed to educational deficits and limited awareness, potentially leading to decisions that are not in the patient's best interest[2].

Limitations

This investigation, while shedding light on the outcomes of patients who LAMA, had several limitations that must be considered while interpreting its findings. A crucial limitation was the high degree of heterogeneity observed among the included studies. This heterogeneity reflected differences in patient populations, healthcare settings, and methodologies across the included studies, all of which could have influenced the outcomes of LAMA. The high heterogeneity observed, as indicated by the I^2 statistic of 99% for hospital readmission rates and 91% for 1-year mortality, raised concerns about the validity of pooled estimates. It suggested that the included studies may not have been measuring the same underlying effect, thus making the combined overall effect less reliable. The meta-analysis was based on observational studies, which are inherently susceptible to the influence of confounding factors. Although some of the included studies may have adjusted for potential confounders, the extent and nature of these adjustments likely varied between studies, further contributing to the observed heterogeneity. Moreover, we did not consider other important outcomes relevant to LAMA, such as patient satisfaction, quality of life, and healthcare costs. Focusing solely on mortality and hospital readmission rates might have provided a narrow perspective on the impact of LAMA.

Conclusions

Our review found no significant association between LAMA and increased 1-year mortality or increased hospital readmission rates, but the considerable heterogeneity among the included studies suggested that these relationships could be highly context-dependent. This heterogeneity underscored the influence of diverse patient populations, healthcare settings, and differing study methodologies on LAMA outcomes. Therefore, the effect of LAMA on patient outcomes appears to be multifactorial and may vary considerably depending on these factors. While the act of LAMA in itself may not directly lead to poorer outcomes, the circumstances surrounding it, including the reasons for LAMA and the specifics of patient care, can potentially have an impact. Despite the lack of a significant association, the findings did not rule out the potential negative effects of LAMA on patient outcomes. The results highlighted the need for further research, particularly studies employing more rigorous and standardized methodologies to allow for more precise estimations of the impact of LAMA. A more comprehensive understanding of the factors influencing LAMA and its consequences is crucial for the development of effective strategies to mitigate any possible adverse outcomes.

Informed Consent
Not applicable

Ethics Approval
Not applicable.

ORCID ID
Fahad Abuguyan: 0000-0003-1243-5709

Conflict of Interest
None declared.

Funding
None.

Availability of Data and Materials
The data are presented in tables and figures. Data are available from the corresponding author upon request.

References

1) Lee CA, Cho JP, Choi SC, Kim HH, Park JO. Patients who leave the emergency department against medical advice. Clin Exp Emerg Med 2016; 3: 88-94.
2) Lekas HM, Alfandre D, Gordon P, Harwood K, Yin MT. The role of patient-provider interactions: Using an accounts framework to explain hospital discharges against medical advice. Soc Sci Med 2016; 156: 106-113.
3) Alfandre DJ. "I'm going home": discharges against medical advice. Mayo Clin Proc 2009; 84: 2552-2560.
4) Spooner KK, Salemi JL, Salihu HM, Zoorob RJ. Discharge Against Medical Advice in the United States, 2002-2011. Mayo Clin Proc 2017; 92: 525-535.
5) Alfandre D, Brenner J, Onukwugha E. Against medical advice discharges. J Hosp Med 2017; 12: 836-839.
6) Harel Z, Silver SA, McQuillan RF, Weizman AV, Thomas A, Chertow GM, Nesrallah G, Chan CT, Bell CM. How to Diagnose Solutions to a Quality of Care Problem. Clin J Am Soc Nephrol 2016; 11: 901-907.
7) Pfuntner A, Wier LM, Stocks C. Most Frequent Conditions in U.S. Hospitals, 2011. Agency for Healthcare Research and Quality; Lekas Rockville, MD, USA: 2013.
8) Sayed MEL, Jabbour E, Maatouk A, Bachir R, Dagher GA. Discharge Against Medical Advice from the Emergency Department. Medicine 2016; 95: 1-5.
9) Noohi K, Komsari S, Nakhaee N, Feyzabadi Y. Reasons for discharge against medical advice: A case study of emergency departments in Iran. Int J Health Policy Manag 2013; 1: 137-142.
10) Mohseni M, Alikhani M, Tourani S, Azami-Aghdash S, Royani S, Moradi-Joo M. Rate and Causes of Discharge against Medical Advice in Iranian Hospitals: A Systematic Review and Meta-Analysis. Iran J Public Health 2015; 44: 902-912.
11) Ti L, Ti L. Leaving the Hospital Against Medical Advice Among People Who Use Illicit Drugs: A Systematic Review. Am J Public Health 2015; 105: e53-e59.
12) Manouchehri J, Goodarzynejad H, Khoshgoftar Z, Sheikh Fathollahi M, Aghamohammadi Abyaneh M. Discharge against Medical Advice among Inpatients with Heart Disease in Iran. J Tehran Heart Cent 2012; 7: 72-77.
13) Paul G, Gautam PL, Mahajan RK, Gautam N, Ragavaiah S. Patients Leaving Against Medical Advice-A National Survey. Indian J Crit Care Med 2019; 23: 143-148.
14) Ibrahim SA, Kwoh CK, Krishnan E. Factors associated with patients who leave acute-care hospitals against medical advice. Am J Public Health 2007; 97: 2204-2208.
15) Labbé E, Herbert D, Haynes J. Physicians' attitude and practices in sickle cell disease pain management. J Palliat Care 2005; 21: 246-251. Erratum in: J Palliat Care 2006; 22: 64.
16) Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, Shamseer L, Tetzlaff JM, Akl EA, Brennan SE, Chou R, Glanville J, Grimshaw JM, Hróbjartsson A, Lalu MM, Li T, Loder EW, Mayo-Wilson E, McDonald S, McGuinness LA, Stewart LA, Thomas J, Tricco AC, Welch VA, Whiting P, Moher D. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021; 372: n71.
17) Lo, CKL, Mertz D, Loeb M. Newcastle-Ottawa Scale: comparing reviewers' to authors' assessments. BMC Med Res Methodol 2014; 14: 45.
18) Abuzeyad FH, Farooq M, Alam SF, Ibrahim MI, Bashmi L, Aljawder SS, Ellouze N, Almusalam A, Hsu S, Das P. Discharge against medical advice from the emergency department in a university hospital. BMC Emerg Med 2021; 21: 31.
19) Alagappan A, Chambers TJG, Brown E, Grecian SM, Lockman KA. How does discharge against medical advice affect risk of mortality and unplanned readmission? A retrospective cohort study set in a large UK medical admissions unit. BMJ Open 2023; 13: e068801.
20) Choi M, Kim H, Qian H, Palepu A. Readmission rates of patients discharged against medical advice: a matched cohort study. PLoS One 2011; 6: e24459.
21) Glasgow JM, Vaughn-Sarrazin M, Kaboli PJ. Leaving against medical advice (AMA): risk of 30-day mortality and hospital readmission. J Gen Intern Med 2010; 25: 926-929.
22) Hasan O, Samad MA, Khan H, Sarfraz M, Noordin S, Ahmad T, Nowshad G. Leaving Against Medical Advice From In-patients Departments Rate, Reasons and Predicting Risk Factors for Re-visiting Hospital Retrospective Cohort From a Tertiary Care Hospital. Int J Health Policy Manag 2019; 8: 474-479.
23) Hwang SW, Li J, Gupta R, Chien V, Martin RE. What happens to patients who leave hospital against medical advice? CMAJ 2003; 168: 417-420.
24) Southern WN, Nahvi S, Arnsten JH. Increased risk of mortality and readmission among patients discharged against medical advice. Am J Med 2012; 125: 594-602.

25) Yong TY, Fok JS, Hakendorf P, Ben-Tovim D, Thompson CH, Li JY. Characteristics and outcomes of discharges against medical advice among hospitalised patients. Intern Med J 2013; 43: 798-802.

26) Albayati A, Douedi S, Alshami A, Hossain MA, Sen S, Buccellato V, Cutroneo A, Beelitz J, Asif A. Why Do Patients Leave against Medical Advice? Reasons, Consequences, Prevention, and Interventions. Healthcare (Basel) 2021; 9: 111.

27) Pasay-An E, Mostoles R Jr, Villareal S, Saguban R. Factors Contributing to Leaving against Medical Advice (LAMA): A Consideration of the Patients' Perspective. Healthcare (Basel) 2023; 11: 506.

28) Trépanier G, Laguë G, Dorimain MV. A step-by-step approach to patients leaving against medical advice (AMA) in the emergency department. CJEM 2023; 25: 31-42.

29) Molina-Mula J, González-Trujillo A, Simonet-Bennassar M. Emergency and Mental Health Nurses' Perceptions and Attitudes towards Alcoholics. Int J Environ Res Public Health 2018; 15: 1733.

30) Jeremiah J, O'Sullivan P, Stein MD. Who leaves against medical advice? J Gen Intern Med 1995; 10: 403-405.

31) Weingart SN, Davis RB, Phillips RS. Patients discharged against medical advice from a general medicine service. J Gen Intern Med 1998; 13: 568-571.