



Rate and Causes of Discharge against Medical Advice in Iranian Hospitals: A Systematic Review and Meta-Analysis

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(Received 12 Nov 2014; accepted 19 Apr 2015)

Abstract

Background: Discharge against Medical Advice (DAMA) is a problem for hospitals which may result in increasing readmissions, morbidities, disabilities, deaths and health care costs. This study, aimed to investigate the rate and causes of DAMA in Iranian hospitals.

Methods: A systematic review and meta-analysis study was conducted in 2014. Required data were collected through searching for key words included: "Discharge Against Medical Advice", "Leaving against medical advice", "causes*", "hospital" and their Persian equivalents, over databases including PubMed, OVID, Google Scholar, Embase, Scopus, Magiran, scientific information database (SID). The reference lists of the articles, certain relevant journals and web sites in this field were also searched.

Results: Out of 913 articles initially retrieved, finally 17 articles were incorporated into the study. There were 244858 individuals studied in the articles. Using a random effects model, the rate of DAMA in Iranian hospitals was estimated at 7.9% (6.3%-9.8%). While the highest rate of DAMA was associated with patients in departments of psychiatry (12%), the lowest rate was related to patients in departments of pediatrics (3.7). DAMA was in men more than women ($P<0.05$). Patient's perception of feeling of wellbeing, financial problems, family problems, the lack of attention from physicians and nurses, inappropriate behavior with patients by hospital team and the lack of timely care were mentioned as main causes for DAMA.

Conclusion: The rate of DAMA in Iranian hospitals is relatively high. Thus effective initiatives in this area are required.

Keywords: Rate, Causes, Discharge, Systematic review, Meta-analysis, Iran

Introduction

Discharge with Discharge against Medical Advice (DAMA) is a major problem for inpatient care delivery considered as one of the indicators of patient dissatisfaction (1, 2). DAMA means a rejection of the permission previously given by the patient to allow health services providers to take care of him (3).

However the prevalence of DAMA has been reported as 1%- 25% (4-6). DAMA is accounted for one percent of total discharges in Canada and varies from 0.8% to 2.2% in the US (5, 7). Besides, in studies conducted in Iran, various rates of DAMA have been reported (8-10).

DAMA is regarded as a risk factor for the recurrence of disease, readmission and higher costs for patient (11-13). Incurred costs due to DAMA in five years were estimated to be nearly 3 billion dollars (14). Patient dissatisfaction with the medical team, personal or family problems, patient's perception of feeling of wellbeing, dissatisfaction with treatment provided, low economic status, improper equipment, the lack of medical and nursing care can be mentioned as the most significant causes for DAMA (14-16).

Through investigating the rate and causes contributing to DAMA in hospitals, their weaknesses can be identified, and accordingly planning should be done to resolve problems and decrease the rate of DAMA. Such attempts may play an important role not only in promoting the health of population, but also in reducing additional costs and increasing hospital revenue.

This study, therefore, aimed to estimate the rate of and causes contributing to DAMA in Iranian hospitals through conducting a systematic review and meta-analysis of the results of published studies.

Methods

Search strategy

A systematic review and meta-analysis study was conducted in 2014 and a search strategy was developed by an experienced librarian. Required data were collected through searching for key words included: "DAMA", "Leaving against medical advice", "Causes*", "hospital" and their Persian equivalents using databases including PubMed, OVID, Google Scholar, Embase, Scopus, Magiran, scientific information database (SID), Google Search engine, and also gray literature. To increase the confidence in the selection of articles, the reference lists of the articles, certain relevant journals and web sites in this field also were searched.

Including and excluding criteria

Published articles from January 2000 to December 2014 indicating the rate of DAMA were included. The inclusion criteria included: articles in English

and Persian language; studies conducted in Iranian hospitals, articles reporting the rate of DAMA.

The following articles were excluded; Letters to editor, Presentations in conferences and Case Reports.

Quality Assessment

To assess the quality of the retrieved articles, two authors evaluated the articles according to the checklist of strengthening the Reporting of Observational studies in Epidemiology (STROBE).

Data Extraction

In the First phase, articles non-relevant to the subject of this study were excluded. In the second phase, the abstract and the full text of articles were reviewed. Computer software for reference management (Endnote X5) was used for organizing and recognizing the duplication articles.

Result of primary search included 913 articles. After excluding non-relevant articles and duplicates among different databases as well as matching the exclusion criteria, 17 articles were incorporated into the study (Fig. 1). The extracted data were summarized in previously designed extraction tables included: Author and year, City, Sample and sample size, DAMA prevalence (%), DAMA-Male Gender (%), DAMA cause (%).

Data analysis

Causes

To estimate the rate of DAMA, a quantitative meta-analysis method was adopted using Computer software (CMA: 2—Comprehensive Meta-Analysis). In order to report the results, forest plots with 95% confidence interval and Funnel plot were used to report the rate of DAMA and examine the publication bias, respectively. According to the Q statistics indicating heterogeneity of results in different studies, the random effect model was used to perform meta-analyses.

To compare the rate of DAMA between female and male we conducted *t*-test by using SPSS Version 16 Software (Chicago, IL, USA). *P*-value of less than 0.05 was regarded as statistically significant.

The contributing causes of DAMA were extracted through the method of manual Content-Analysis. This method is used to detect, categorize and report themes from text and is very popular in analyzing qualitative data (17). Two researchers coded data by through the following process: Data immersion (getting accustomed to data context),

identifying and extracting primary codes, themes detection (assigning the extracted primary codes to the related themes), reviewing and completing the detected themes, naming and defining themes, the reliability assurance of extracted codes and themes (two encoders agreed on removing disputed cases through discussion).

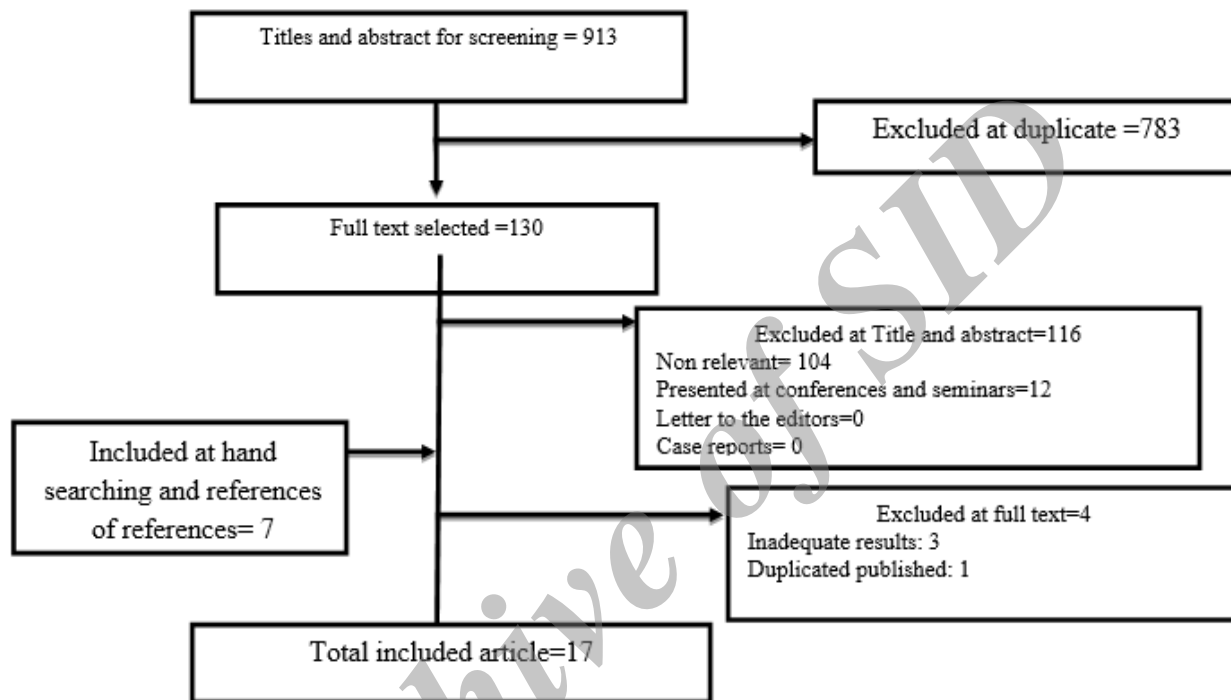


Fig. 1: Literature review and retrieval flow diagram

Results

Out of 913 retrieved articles by the initial search, 17 articles were incorporated into the study (8, 18-32). The information from the studied articles has been provided in Table 1. In general, there were 244858 individuals studied in the articles. The articles were published from 2010 to 2014. As it is observed in Table 1, the studies related to the rate measurement of discharge against medical advice have been conducted only in seven cities of Iran especially in Tehran with the most frequency. The lowest rate of discharge against medical advice was reported by a study with the participation of 4835 inpatient children in Sari (2.2%). The highest

rate of discharge against medical advice was belonged to a study conducted on 1171 patient from the department of physiotherapy (34.4%). The mean score of discharge against medical advice was higher in men compared with women (42.3 ± 6.5 versus 57.6 ± 6.5). The statistical test showed that the difference in the rate of discharge against medical advice between two gender is statistically significant ($P < 0.05$). Out of the 17 reviewed articles, 3 articles have investigated DAMA among patients in departments of pediatrics, 2 articles in departments of psychiatry, 4 articles in emergency departments, 7 articles in inpatients wards (whole hospital) and 1 article in department of cardiology.

Table1: Characteristics of reviewed articles

DAMA cause (%)*	DAMA-Male Gender (%)	DAMA Prevalence (%)	Sample and sample size	City	Reference Number
Patient-related reasons: financial constraint (7.9), family problems (3.4), feeling of wellbeing (59.7), Be traveler (6.2).	56.6	1100 (4.2)	Children-26089	Mashhad	18
Hospital condition: Nurse and Physician negligence (15.5), Inappropriate behavior (5/4), physician's suggestion (18), absence of timely physician (6.2), lack of skilled medical staff (18/3), Improper cleaning (3.7), inadequate equipment (5.6), poor nutrition (1.1), unsuitable environment (8.2).	-	237 (4.6)	General patients - 5137	Urmia	21
Hospital staff- related reason (16.5), treatment related reason (39.2), Hospital condition (23.2), Patient- related reasons (54.0)	55.5	2026 (10.3)	General patients- 19660		8
Patient-related reasons: financial constraint (3.1), family problems (20.1), fear of treatment (5.1), patient job (4.5), no have family member in hospital (12.2), feeling of wellbeing (28.4), Be traveler (26.2)					
Hospital condition: Nurse and Physician negligence (34.3), Inappropriate behavior (13), absence of timely physician (18.8), lack of skilled medical staff (30.4), improper cleaning (9.4), inadequate equipment (19.8), poor nutrition (8.6), unsuitable environment (6.2), other (3.3)	59/6	483 (5.1)	General patients- 9295	Kerman	22
Patient-related reasons: feeling of wellbeing (20), unhelpful from treatment (3), Transferring to another hospital (4), Transportation problem (7), Lack of consent to surgery or invasive procedures (5), holiday (3), not have family support (3), refer to previous doctor (10)					
Hospital condition: fear of hospital infection (20), Inappropriate behavior (7), inadequate equipment (2), absence of timely physician (2), treatment by medical students (6), couldn't choice a doctor (8)	41.7	403 (34.4)	psychiatric wards patients- 1171	Sari	23
Patient-related reasons: Disappearance of symptoms (35.6), Lack of insight (25.6), Missing family (18.9), Economic problem (12.2), Fear of other patients (10)					
Hospital condition: Boredom from ward environment (16.7), Anger over given treatment (8.9), Lack of trust to the doctor (3.3), Lack of satisfaction with staff behavior (4.4), other (8.9)	65.3	2601 (14)	General patients- 18518	Tehran	24
Patient-related reasons: Feeling complete recovery (45.4), Transferring to another hospital (15.1), The patient's personal reasons (5.8), Going to home (4.5), Financial problems (1.3)					
Hospital condition: Lack of required facilities (7.3), Not paying full and close attention to the patients (5.1), Hospital intolerance (3.1), Prolonged treatment process (2.8), Dissatisfaction with the hospital (2.8), Lack of required special medical services (1.7), Overcrowding in the unit and department (1.5)	56.7	97 (5.3)	Children- 1842	Tehran	20
Patient-related reasons: Perceived improvement of child illness (32.9), Financial problems (15.5),					
Hospital condition: Unsatisfactory treatment and care (29.9), Inconvenience for child hospitalization (18.6), not declared (3.1)	-	31 (3.4)	psychiatric wards patients-908	Tehran	25
-	61	121 (5.6)	Emergency Department- 2161	Kerman	27
Hospital condition: Dissatisfaction from physician (33), Advice of the doctor (27.5), Lack of required facilities (12.7), Dissatisfaction from nurses (9.3), unsuitable environment (6.6), hospital cost (3.6), others (3.9)	65.3	330 (8.2)	General patients- 4017	Ghazvin	31
Patient-related reasons: Feeling of recovery (12), Personal reason (13.9), Transportation (7.5), Follow up (0.9), Unknown (65.7)	52.7	108 (2.2)	Children- 4835	Sari	26
Patient-related reasons: Feeling better (47.1), Financial problems (4), Referring to a private center (10.5), Referring to certain centers due to personal ties (7.5)	58.4	1502 (13.3)	Emergency Department-13309	Tehran	32
Hospital condition: Oral statements of physicians regarding improved conditions (9.2), No ICU bed (2), No CCU bed (1.1), No inpatient bed (2.1), Lack of appropriate specialty (2.7), Advice of the doctor and staff to refer to other centers (4.6), Unaccountability of the physician and the staff (3.1), Poor attendance (0.8), Overcrowding and insufficient care (1.4), Dissatisfaction with the course of treatment (3.3)					
Patient-related reasons: Lack of consent to surgery or invasive procedures (30.8), Personal or family issues (16.8), Feeling well (12.9), Financial problems (11.1), Desire to be transferred to another hospital (10.1), Requesting temporary leave from hospital stay during public or extended holidays (2.9), No noticeable improvements (5.9), No reason mentioned (2.8)	59.5	992 (4.9)	In patients with Heart Disease- 20289	Tehran	9
Hospital condition: Dissatisfaction with hospital services/facilities (2.3), Seeking consultation elsewhere (1.4), Delay in delivery of health care services (0.8), Dissatisfaction with the staff's behavior (0.7), Other reasons (1.5)					
-	56.3	860 (9)	General patients- 9463	Shiraz	10
-	51.1	7967 (8.4)	General patients-94441	Mazandaran	30
Patient-related reasons: Feeling better (78), Tendency to refer to a better center (7.7), Not having tendency to hospitalization (8.9)	67.3	1516 (11.8)	Emergency Department- 12843	Tehran	29
Hospital condition: Lack of expert physicians (0.3), Lack of suitable services (2), Ward being over crowded (2.3), Need to hospitalization in special units such as ITU or CCU (2.1), other (1.3)					
-	-	178 (20.2)	emergency department-880	Tehran	19

* "**Patient-related reasons**" and "**Hospital condition**" are two main them of DAMA cause

The rates of DAMA in terms of these groups are provided in Table 2. While the highest rate of DAMA is associated with patients in departments of psychiatry, the lowest rate is related to patients in departments of pediatrics.

In general, using a random effects model, the rate of DAMA in Iranian hospitals was estimated at 7.9% (Fig. 2). (DAMA=7.9% [6.3% 9.8%], $df=16$ $I^2=99.5$, $Q=3613.9$).

Table2: Discharge against medical advice rate in Iranian hospital according to study groups

Q-value	I ²	df	Upper and Lower limit (%)	DAMA rate (%)	Groups
1320	99.4	7	[6 9.6]	7.6	General patients and cardiac patients
148	97.9	3	[9.1 15.1]	11.8	Emergency Department patients
51	96	2	[2.4 5.5]	3.7	Children
1195	99.4	1	[10 65]	12	psychiatric wards patients

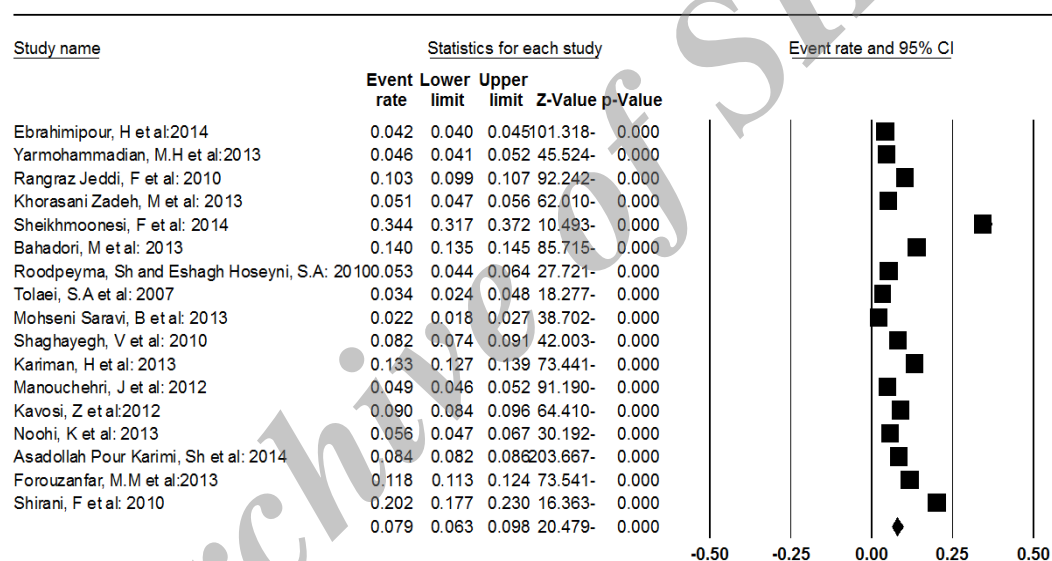


Fig.2: The rate of discharge against medical advice in Iranian hospitals using a random effects model

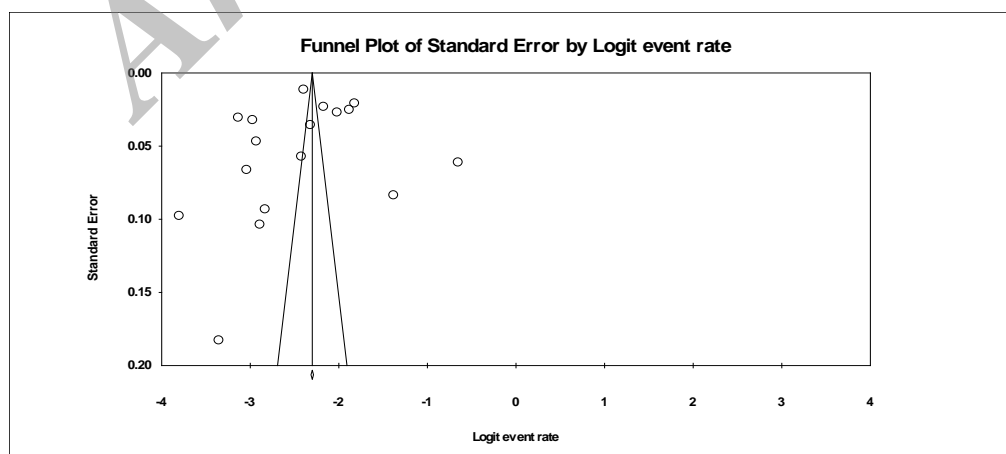


Fig. 3: The funnel plot to examine the possibility of the publication bias

In the current study, a funnel plot was used to examine the publication bias in reviewed studies (Fig. 3). The results of this figure show that there is the possibility of risk of publication bias.

Using content analysis, causes contributing of DAMA were categorized into two main categories: causes related to patient and his/her family and hospital-related causes. The most important causes in each category, in terms of their priority, are presented in Fig. 4 and 5. As Fig. 4 shows, among causes related to patient and his/her family, "pa-

tient's perception of feeling of wellbeing" (29%), "financial problems" (21%) and "family problems" (16%) were considered as the most important causes, whereas among hospital related causes.

As Fig. 5 shows, among hospital related causes "lack of attention from physicians and nurses" (31%), "inappropriate behavior by hospital team" (19%) and "absences timely physician" (14%) were regarded as the most important causes in DAMA.

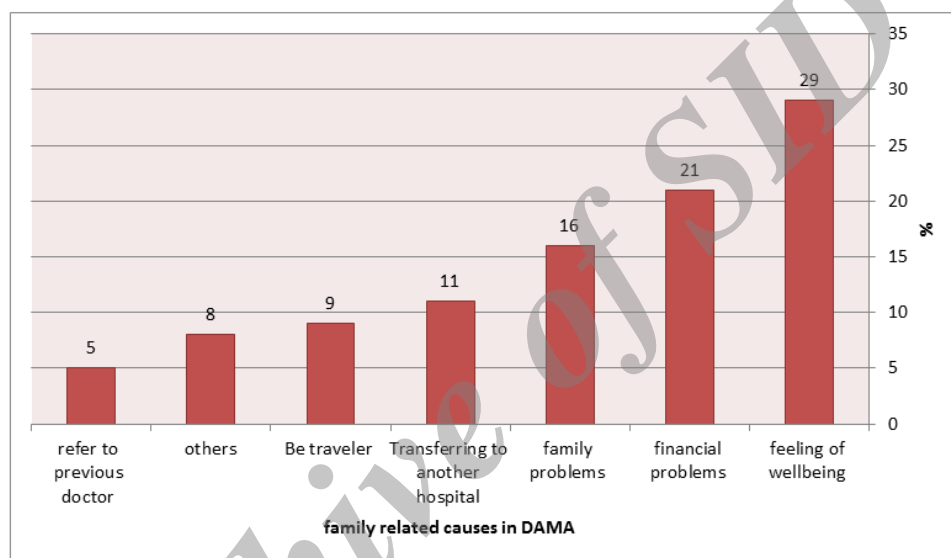


Fig. 4: The most important patient and family related causes contributing to discharge against medical advice

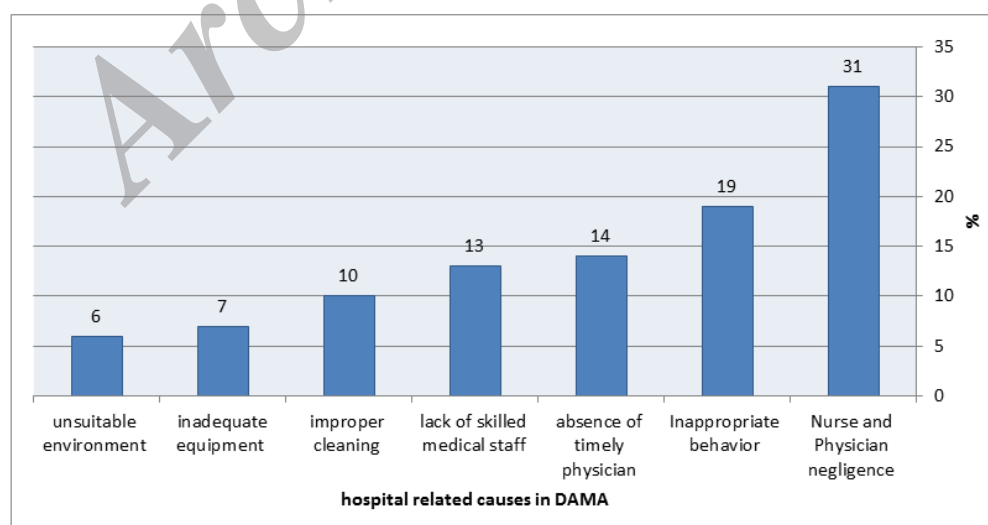


Fig. 5: The most important hospital related causes contributing to discharge against medical advice

Discussion

The results of the current study showed that the rate of DAMA in Iranian hospitals is 7.9%. The most important causes contributing to DAMA included patient's perception of feeling of wellbeing, financial problems, the lack of attention from physicians and nurses as well as inappropriate behavior by hospital team.

The rate of DAMA in Iranian hospitals is too high in comparison with many studies conducted in developed countries (11, 33-37). One of the possible reasons for this issue can be high quality services in hospitals of developed countries. As the results of the review of studies conducted in Iran showed, hospital related causes (such as the lack of attention from physicians and nurses, inappropriate behavior by hospital team, improper equipment and environment) are the most important reasons for DAMA. So, paying more attention to the improvement of the quality of services provided to patients in Iranian hospitals and in particular, special focusing on the hospital related causes mentioned in this study, are necessary.

According to the results, the rate of DAMA among patients in departments of psychiatry has been higher than those of other patients and such a higher rate has been also reported in previous studies (38-42). Given the nature of the disease of this group of patients which extends average length of stay in hospital, these patients tend more to DAMA due to the perception of feeling of wellbeing, boring hospital environment and financial problems. Another possible reason may stem from cultural issues, because mental illness is considered as a social stigma and an unpleasant phenomenon from social and family perspectives in Iran. Most patients and their families, therefore, tend to early discharge from hospital, so that their relatives and others close to them do not become aware of the hospitalization. It is, therefore, important to pay more attention to and focus on this group of patients.

Besides, the rate of DAMA among children was less than other patients. The results of some studies also indicated the low rate of DAMA in departments of pediatrics (2, 4, 43). Main reasons for

this issue may be the lack of decision-making authority of children and parents' worries for their children's health. Therefore, they try to solve financial problems anyway and the treatment of their children will be continued until full recovery is made and patient can be discharged based on physicians' orders. Moreover, the rate of DAMA among children is less because they do not work and are less affected by family problems.

The rate of DAMA in emergency departments in Iranian hospitals was estimated at 11.8%. In comparison with results of most studies conducted in emergency departments, this rate is higher (44, 45). One of the main reasons for this issue may be overcrowding in emergency departments in Iran, because all 4 studies conducted in emergency departments in Iran were done in reference hospitals which are usually overcrowded. Thus increasing the space, facilities and human resources working in these departments can be effective in reducing the rate of DAMA.

The results showed that DAMA was in men more than women, and this result had been shown in previous studies (46-48). The reason of low rate of discharge in women than men could be because of their more cautious and fear. Male discharge against medical advice was higher than female. It may be due to men job and their responsibility to make a living which forces them to go back home sooner, also; their early recovery feeling in compared with women due to their physiology and masculine nature.

In this study, the main reasons for DAMA were categorized into two main categories: causes related to patient and his/her family and hospital-related causes. In general, patient's perception of feeling of wellbeing, financial problems, the lack of attention from physicians and nurses as well as inappropriate behavior by hospital team were considered as four main causes contributing to DAMA. In this regard, results of a study conducted by Alibis and Rami also pointed to dissatisfaction with treatment trends, financial and family problems, patient's perception of feeling of wellbeing, preferring other hospitals, dissatisfaction with hospital environment, inadequate treatment and being a teaching hospital (49). In many studies

conducted in other countries, the relationships between causes such as insurance status, socio-economic status, patient history as well as other similar causes and DAMA were also investigated (50-53). However, unfortunately many of these causes have not been paid enough attention by researchers in Iran. Further research, therefore, should investigate the relationship between various variables regarding DAMA.

Different studies throughout the world have addressed impacts of DAMA such as costs, readmissions, deaths and morbidities (6, 12, 54-62). Such issues regarding patients discharged from Iranian hospitals have not been addressed in studies which may be primarily due to the poor information system in Iranian hospitals. Given the importance of the issue, the investigation of results and impacts of DAMA in Iranian hospitals is considered as an inevitable necessity.

Time is another issue related to studies on DAMA conducted in Iran, so that all studies have conducted from 2010 and in our search results, no study was found which had been published before that time. The introduction of Clinical Governance in Iran can be considered as a possible reason for this issue, because during the indicated time interval which most studies have been conducted, clinical governance model has been implemented in Iranian hospitals (63). Through implementing this model with special emphasis on DAMA, a great attention has been paid to DAMA forms. If this assumption is true, then we can argue that implementing models similar to the clinical governance can be effective in this area. Fortunately, in recent year, Iranian hospitals' accreditation standards include great attention to the issue of DAMA which requires careful attention in order to successfully implement it and achieve excellent results in this field.

Despite the efforts of authors, the lack of access to some theses and hospital reports on DAMA can be mentioned as a limitation of this study.

Conclusion

The rate of DAMA in Iranian hospitals in comparison with those of other countries is relatively

high; thus effective initiatives in this area are required. In addition, patient's perception of feeling of wellbeing, financial problems, the lack of attention from physicians and nurses as well as inappropriate behavior by hospital team were mentioned as main reasons for DAMA. These causes can be given high priority in plans for quality improvement and reducing DAMA. Furthermore, given the limited studies conducted in Iran and the lack of investigation into some variables contributing to DAMA and also impacts of DAMA in Iranian hospitals, more research is needed in this area.

Ethical Considerations

All ethical issues including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the author.

Acknowledgment

We would like to specially thank Masjid Nakhaei and Ahmad Negahban for sincerely critical comments in the present study. The authors declare that there is no conflict of interests.

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