Discharge against Medical Advice (DAMA) in Hospitals of Tabriz, Iran

Jafar Sadegh Tabrizi[1], Mohammad Asghari Jafarabadi[2], Asaad Ranai[3], Erfan Ayubi[4]

[1]*Associate professor of Health Services Management, Department of Health Services Management, Tabriz Health Services Management Research Center, School of management, Tabriz University of Medical Sciences, Tabriz, Iran*
[2]*Assistant Professor of Road Traffic Injury Prevention Research Center, Faculty of Health, Tabriz University of Medical Sciences, Tabriz, Iran*
[3]*PhD student of Health Services Management, Department of Health Services Management, School of Management and Medical informatics, Iran University of Medical Sciences, Tehran, Iran*
[4]*PhD Student in Epidemiology, Department Epidemiology and Biostatistics, School of Public Health and Health Research Institute, Tehran University of Medical Sciences, Tehran, Iran*

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Correspondence to: Asaad Ranai

Address: Department of Health Services Management, School of Management and Medical informatics, Tabriz University of Medical Sciences, Tabriz, Iran

Email:a.ra4249@gmail.com

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ABSTRACT

BACKGROUND: Discharge against medical advice (DAMA) has been associated with increased morbidity and re-admission of the patients who have been DAMA. The present study aims to evaluate the prevalence of DAMA and to determine the associated factors for DAMA.

METHODS: A cross-sectional study was conducted from April 2012 to September 2012 in 17 hospitals in Tabriz, Iran. Data collection was performed using a two-part checklist including demographic factors, information about hospital and DAMA reasons. The profile of all DAMA patients was studied.

RESULTS: The overall DAMA rate among hospitals was 5.7%. The highest DAMA rates were from private and educational hospitals, 10.8% and 9.6% respectively. The lowest rates were from social security hospitals with 2.5%. In this study, sex, age, month and health insurance were significant predictors of DAMA.

CONCLUSION: In comparison to other studies, relatively higher rates of DAMA in this study show the need for conducting additional studies to define the causes of DAMA and to devise appropriate interventions to decrease DAMA rate. Determining DAMA rate and its determinants can play an important role in early detection of these at-risk patients and in instituting appropriate intervention.

Keywords: Hospitalization; Discharge against medical advice; Readmission; Risk factor

INTRODUCTION

Discharge against medical advice (DAMA) is a complicated problem and due to incomplete treatment may threaten patients with increasing severity of illness and risk of re-admission [1, 2]. Several studies since 1960 have found that patients in psychiatric hospitals and acute care hospitals have the highest DAMA rate. Vingart and colleagues (1998) reported that DAMA rate increased from 0.4% in 1984 to 0.8% in 1995[1]. In recent decades, due to a number of reasons including codification of patient rights charter, and social, clinical and legal contexts, DAMA rate has been high. However, now that the discussions are focusing on quality healthcare service management and on increasing the quality of patient-centered services, quality of hospital services has improved and DAMA rates have decreased [3-5].

DAMA patients are faced with the problem of inadequate treatment, increased complications, and risk of re-admission and increased duration of hospital stay during re-admission [6-8]. Hwang et al (2003) showed that DAMA patients' risk of re-admission within 15 days after discharge was 7 times higher than the patients who were formally discharged [9]. Palepo et al (2003) reported that DAMA record was one of the strongest causes of re-admission in patients with HIV infection [7]. Besides imposing high readmission cost, DAMA and incomplete treatment for the patients with meningitis, endocarditis and diabetic ketoacidosis, or pneumonia may even lead to death [10, 11]. Since a comprehensive study has not been done

on the DAMA status in Tabriz hospitals in the past, this study was conducted to describe the rate of DAMA, its causes and related factors in Tabriz hospitals.

METHODS

This cross-sectional study was conducted in the city of Tabriz, Iran from April 2012 to September 2012. This study aimed to assess the rate, causes and factors associated with DAMA in eight teaching hospitals, two public hospitals, five private hospitals and two social security hospitals. All DAMA patients discharged within 6 months of study period were included. Hospitals that possessed health information system (HIS) for recording DAMA patients' data and were under the authority of Treatment Deputy of Tabriz University of Medical Science were included in the study. Hospitals that did not have a system for recording DAMA patients or did not provide information to our research team were excluded from the study.

Data collection was performed using a two-part checklist. The first part, consisted of demographic factors (age, gender, type of insurance), as well as information about the hospital, wards and duration of hospitalization for each patient. The second part contained the list of reasons for DAMA which included four main areas: personal and family reasons, reasons associated with hospital personnel, reasons associated with treatment and reasons associated with hospitalization and welfare sectors. The causes reported by the patients were recorded as a subset of these four areas in the check list.

Three main areas were the focus of this study, including:1) assessing the rate of DAMA based on the ward and month of hospitalization for each hospital, total DAMA rate for each hospital and finally estimation of the overall DAMA rate for all the hospitals, 2) assessing the reasons for DAMA in each hospital and overall estimation of reasons for all hospitals, documented reasons in HIS system, 3) assessing all variables including demographic information of other variables such as month of admission, length of stay, type of ward and diagnosis.

The data available in electronic records of patients were extracted and imported into the respective checklists, and then the data was analyzed by SPSS16 software. For descriptive data, descriptive statistics (percentage, frequency, mean, standard deviation and cross-tabulations) and for analytical data, inferential statistics (Pearson correlation coefficient) were used.

Due to the retrospective nature of the study, existence of missing data is natural. For taking the missing data into consideration in the study, larger sample size was selected and during the analysis, lists of missing data were excluded. To adjust for potential confounders, we used multivariable regression.

RESULTS

The total number of DAMA patients in the studied hospitals was 15709. The overall DAMA rate among hospitals was 5.8% over the course of 6 months of study. DAMA rate in private hospitals was 10.8% and in teaching hospitals was 9.6% (Table 1). Most DAMA patients had Health Services insurance (6302; 41.7%) and patients without insurance had 15.6% DAMA rate (Table 2).

Table1: Rate of discharge against medical advice (DAMA) based on hospital type

Type of Hospital	All admissions	DAMA	Rate of DAMA (%)*
Total	252389	15709	5.8
Teaching	150662	13284	8.8
Non-Teaching-Governmental	9536	270	2.8
Social Security	88121	221	0.2
Private	19788	1934	9.7

*(100*DAMA /all admissions)

The duration of hospitalization ranged from 1 to 38 days with a mean of 2.6 days for all hospitals.

Multivariable linear regression analysis, illustrated that age ($P<0.001$) and month ($p<0.016$) had a significant effect on the duration of hospitalization. Also, health insurance and social security had significant effect on hospitalization period. Other results have been shown in table 3.

Only one hospital recorded the reasons of DAMA. The main reasons for DAMA in this hospital were personal reasons such as anxiety and discomfort that was consistent with other studies in this field. Other main reasons were factors related to the staff, financial constraint, and dissatisfaction with care (Table 4).

Table 2: Characteristics of the patient with DAMA

Characteristics	DAMA	All admissions
Sex*		
Male	5190 (34.3)	140716 (52.48)
Female	9928 (65.7)	127391 (47.51)
Age*		
<18 years	2529 (16.6)	90994 (31.80)
18-35 years	7126 (46.8)	97395(36.32)
35-50 years	1933 (12.7)	41197 (15.36)
50-65 year	939 (6.2)	18435 (6.87)
≥65 years	905 (5.9)	20174 (9.75)
Month (2011)*		
4	1921 (12.6)	43796 (16.33)
5	2411 (15.9)	42771 (15.95)
6	2457 (16.3)	42827 (15.97)
7	2736 (18.1)	45718 (17.05)
8	2775 (18.4)	48722 (18.17)
9	2550 (18.2)	44263 (16.53)
Health insurance*		
Social Security	4065 (27.1)	72904 (27.19)
Health Services	6302 (41.7)	71059 (26.50)
Rural insurance	1041 (6.9)	31035(11.5)
No insurance	2354 (15.6)	38781 (14.46)
Private insurance	57 (5.6)	34319 (12.80)
Length of stay**	2.65 (3.31)	4.6 (1.8)

* presented as n (%)

** presented as mean(sd)

DISCUSSION

We found that the overall DAMA rate was 5.8% for the 17 studied hospitals, much higher than what has been reported in similar studies in the United States where DAMA rate is 1.4% to 2% of all hospital admissions [2, 4]. In another study in Iran, DAMA rate has been estimated to be 10.3% [12]. In other studies conducted in Iran, emergency, newborns and psychotherapy wards had a DAMA rate of 20%, 5.3% and 3.4%, respectively [13-15]. Stranges et al (2009) suggested that DAMA rate in developing countries were two times higher than developed countries [16]. Available evidence also suggests a high level of DAMA in Iran compared to developed countries.

Findings of this study show that private and teaching hospitals had a higher DAMA rate, 9.7% and 8.8% respectively. This result is in line with the study by Onukwugha et al that stated teaching hospitals as one of the main reasons of DAMA [17]. But the study of Ibrahim and colleagues (2007) in acute care hospitals in the United States showed that teaching hospitals had lower rates of DAMA compared to other hospitals [4]. Also, Smith (1991) in the United States showed teaching hospitals having the lowest DAMA rate [18]. These variations may reflect the differences in the healthcare delivery models in various countries. In this study, influential factors for DAMA included younger age, lack of insurance and month of admission as suggested by other studies. The significant relationship observed between age and DAMA is

Table 3: Linear regression of duration of hospitalization with related factors

Variable		β	SE	Beta	P value
(Constant)		8.309	.188	-----	.000
Age		-.042	.002	-.208	.000
Month		.068	.028	.029	.016
Insurance status	Referent (No insurance)	----	-----	-----	-----
	Private insurance	.719	.399	.022	.072
	Rural insurance	.397	.491	.010	.419
	Health Services	-1.359	.454	-.037	.003
	Social Security	-.972	.144	-.096	.000
Sex	Referent (Male)	----	----	----	----
	Female	-.277	.101	-.034	.006
Hospital Type	Referent (Non-Teaching-Governmental)	----	-----	-----	-----
	Teaching	1.5	.501	-.044	.005
	Social Security	.011	.101	-.056	.074
	Private	1.67	.502	-.036	.004

Model: F = 138.4, degree of freedom = 4, R=0.578, R square=0.693, Adjusted R Square=0.637.

B = raw score regression coefficient; SE = standard error; Beta = standardized regression coefficient

Table 4: Reasons for DAMA in one of Hospitals

DAMA reasons	Frequency	(%)
Family concerns/obligations	24	8.4%
Factors related to the staff	44	16.6%
Factors associated with treatment	22	8.2%
Personal reasons	126	51.1%
Financial constraint	18	9.2

consistent with other studies and confirms that the younger age is a predictor of DAMA [2, 4, 19]. Further, in our study, female gender was significantly related to DAMA, which is inconsistent with the findings of many studies in which male gender is reported to be associated with DAMA. In an extensive study by Ibrahim et al, which analyzed a large sample of state hospitals in the United States in 2002, showed that DAMA rate in men was more than women [4]. In addition, Tawk et al observed that DAMA rate of men was twice that of women (60% of total discharges) [20]. In a prospective study of patients with schizophrenia admitted to a psychiatric hospital in 2010, during one year, male gender was a significant factor in predicting DAMA [21].

Of note, we found that the month of admission had a significant effect on DAMA; an effect not reported in previous studies.

Based on the findings of this study, the mean length of stay for patient with DAMA was 2.6 as compared to 3.7 days for non-DAMA patients. Findings of the previous studies confirm that the mean length of stay for DAMA patients was significantly less. For example, Strang and colleagues (2009) reported that this period in DAMA patients was 2.5 days shorter than other patients [16]. In psychiatric units, a study found the mean length of stay for patients with DAMA was 6 days less than standard discharges [22]. In acute care hospitals, mean length of stay for DAMA patients was reported to be two days shorter than other patients [4].

In our study, only one hospital recorded the reasons for DAMA. The main reason for DAMA in this hospital was personal reasons such as anxiety and discomfort that is consistent with reasons reported in other studies. Green (2004) found that more than 67% of DAMA patients stated personal problems as the main reason for their insistence to DAMA. In a teaching hospital in Canada, personal issues were one of the main reasons for DAMA [23]. Jedi et al (2010) found that 67% of DAMA patients stated personal problems as their main reason [12].

In this study, private and teaching hospitals had high DAMA rate. It is possible that high DAMA rate in private and teaching hospitals could be due to dissatisfaction with health care services and low quality of delivered care. This may suggest the need for appropriate interventions to improve quality of service and attention to patient-centered care to decrease DAMA rate [2, 4, 14, 24-27]. At least among patients with cardiovascular problems, DAMA was inversely related to the quality of hospital services and hospitals with high quality service had lower DAMA rate [27].

One of the strength of this study is the inclusion of a large number of hospitals which increases generalizability of findings through Iran although its generalizability to other countries may not be possible. Another possible strength of this study is consideration of additional factors such as month of admission and its relationship with DAMA that has not been reported in previous studies. There were some limitations including lack of a unified HIS system for data recording in all hospitals. In most hospitals, recording the data of DAMA patients on HIS system had some deficiencies such as not recording the education status, income and reason for DAMA.

CONCLUSION

This study showed that the average DAMA rate was 5.8%. Younger age, female gender, hospital type and ward, diagnosis, type of insurance, and month of hospitalization were predictors of DAMA. Further studies are needed to explore the reasons of DAMA from the patient's and health care worker's perspective.

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