

## Consequences of Discharge on the Contest of Patients Attending Poisoning Emergency Department: A Descriptive Study West of Iran

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**Abstract:** Discharge from hospital on person contest could be a threat to patient's health. This is especially important in the emergency and intensive care department since it may threaten patient's life due to absence of proper medical care. The present study aimed to investigate the consequences of discharge on the consent of the patients attending poisoning emergency department in Imam Khomainsi hospital in Kermanshah, Iran in 2015. This was a prospective cohort study among 302 patients who were discharged on their personal contest in 2015. The patients received a phone call a week after their discharge. The required data was collected using a questionnaire developed for the study. Data were analyzed by SPSS Version 16. Mean age was  $28.06 \pm 12.14$ , their mean hospitalization time was  $14.56 \pm 12.4$ , the mean time of poisoning and attending a hospital was  $3.24 \pm 12.4$ . Also, there were meaningful difference between ages of genders ( $p = 0.85$ ), time interval of poisoning and attending a hospital ( $p = 0.873$ ) and hospitalization period ( $p = 0.279$ ). Among the patients, 19 (9.3%) reported history on seizures, 29 (14.1%) history on suicide, 16 (7.8%) history on psychic. There were meaningful relationships reported among suicide history and problems and pauses to return to work and feeling sleepy, being female and falling down and head trauma and impaired balance while walking, history on addiction and problems with eating, unstable vital signs on arrival and difficulty in returning to work and impaired balance. Patients with the factors known to the study were required to receive more care and in the case of discharge on personal contest, they should learn necessary care and possible warnings and consequences of their decision.

**Key words:** Poisoning, self-discharge, hospital, patients, warnings

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### INTRODUCTION

Each year, thousands of deaths from drug toxicity are reported in the world. Accidental poisonings are mainly reported in children and adults over age 50 however, deliberate self-harms or suicides are seen among teenagers and at early adulthood. Most chemicals could cause poisoning, especially if they were used in their proper conditions to show their effects. One condition could be overdose. In fact, there would be poisoning effects in the case of medicine overdose. In the other words, medicine overdose is not known as a treatment anymore but it is a case of poisoning (Sarkar *et al.*, 2013).

Also, medicines has been known as the reason to more than a half (56%) poisoning cases around the world (Burns *et al.*, 2000). Poisoning is a reason which takes people to hospitals. In America, about 5 million cases of poisoning are admitted to hospitals. Unintentional poisoning is the fifth leading cause of deaths by accidental injuries while 40% of cases are caused by drugs (Schwake *et al.*, 2009). For example, sever poisoning by drugs kills over 2000 people each year in Bangladesh (Okumura *et al.*, 2012). Clinical effectiveness, patient safety and satisfaction after treatment form one of the aspects of clinical governance. Many of the problems result from lack of proper relationship between doctors

and patients and subsequently a sense of dependency and lack of control over their own affairs which is the source of unpleasant emotions, so that despite the doctors justification, patients decide to leave the hospital. Note that 2% of total hospital discharges were chosen for the above mentioned reasons (Brook *et al.*, 2006). Statistics showed that hospital discharges on patients decisions were 0.8-2.2% in developed countries such as the United State especially in training hospitals (Hwang *et al.*, 2003). Also, the prevalence of self discharges in England, Canada and Nigeria were 1.8, 1 and 4.2%, respectively.

In Iran the reported prevalence was from 3% at psychological hospitals and 20% in emergency departments (Duno *et al.*, 2003; Alfandre, 2009). Studies showed that re-hospitalization rate among patients, who discharges on their decisions, was estimated 25% due to incomplete treatments (Pages *et al.*, 1998). Self-discharge readily occurs when the patient asks to leave the hospital early despite the medical advice given. It is believed that many of these patients need to later re-hospitalization or face severe consequences (Shirani *et al.*, 2010). In this type of discharge, the patient voluntarily requests to leave the hospital before doctor's admittance (Rangraz *et al.*, 2011). Hospitals should apply different strategies to improve uptake and adherence of patients as well as patients' perception, where the patients do not seem willing to take their treatments in the hospitals. Therefore, Discharge Against Medical Advice (DAMA) has been known as a common problem in many hospitals which suggests patients' dissatisfaction or major problems (Saitz *et al.*, 2006). Leaving hospital on personal responsibility can be a threat to the patient's health; this issue is important in the emergency department and acute care units, since patient's survival may be at risk due to lack of adequate and timely medical treatment (Henry *et al.*, 2007; Gerbasi and Simon, 2003; Jeremiah *et al.*, 1995). Many patients admitted to poisoning emergency in the country are interested in early discharge from the hospital due to financial problems and lack of adequate insurance coverage and social or cultural reasons. In many cases, patients persist on their discharge while giving various justifications including not having acute symptoms or unconsciousness in the hospital, worries about other family members or friends and colleagues informed in cases of suicide, etc. (Armenian *et al.*, 1999). One of the main reasons to ask for DAMA would be communication problems, financial worries, cultural and social issues, the hospital environment, knowledge, attitude, ability and skills of health care providers (Maghsoudi *et al.*, 2014). Personal or family problems, dissatisfaction with treatment, feeling

of monotony and boredom with hospital environments, lack of tolerance at hospitals environment were suggested as reasons for hospital discharges with personal fulfillment (Hwang *et al.*, 2003). In other hand, epidemiological researches are the first step for designing and implementing of preventive intervention programs (Alavijeh *et al.*, 2015, 2016; Hosseini *et al.*, 2016; Mirzaei *et al.*, 2011; Jalilian *et al.*, 2016).

The present study aims to determine risky factors to predict consequences of patients discharge on their own responsibilities. This could prevent DAMA cases and introduce the right time to leave the hospital.

## **MATERIALS AND METHODS**

It is a prospective, descriptive analytical study investigating 302 patients with drug toxicity requested DAMA attending emergency department of Imam Khomeini hospital, West of Iran in 2015. A research developed questionnaire was used to collect the required data. Data were collected in two phases, first at patient's discharge on their responsibility and a week later through calling patients or their family members. Primary information was available in patients and their doctors' profiles which showed type of poisoning, complications and symptoms of patients attending hospitals and suggested remedies at emergency departments.

Demographic information included length of stay, age, sex, cause of hospitalization or final diagnosis or pesticide dose, the interval between drug administration and patient history of drug addiction and its type, history of suicide or hospitalization due to poisoning, seizures associated with disease, history of neuropsychiatric and previous consumption of neurological drugs, vital signs on admission and discharge, GCS, pupils, apnea or cyanosis, agitation at the time or in the course of hospitalization, opium withdrawal symptoms with naloksan injection, evidence of aspiration pneumonia, respiratory distress, repeated seizures, loss of consciousness or arrhythmias in the course of re-admission and discharge due to the physician. Also in patients with ocular symptoms of methanol poisoning and poisoning with opium dose and maintenance dose of Stat naloksan was inserted. In this study, patients with tachypnea, tachycardia, hypotension or unstable vital signs stable and others were defined. Furthermore, naloksan dose was defined based on naloksan injection 5.6 g. Having leukocytosis increased CPK, LDH to diagnose rhabdomyolysis, elevated liver enzymes and in the presence of ABG having metabolic acidosis or the need for dialysis, especially in patients with alcohol intoxication were other cases.

In the present study, all patients with poisoning who were discharged with personal satisfaction were enrolled in the study till the completion of the required number of samples. If the patients were absent for patient follow-up a week later, they were excluded from the study. To analyze the data, SPSS Version 16 was used and Type I error was defined 0.05%. Also, descriptive statistics (mean, proportion and frequency), parametric analysis, Pearson correlation and nonparametric analysis of variance and chi-square test, Mann-Whitney and Fisher's accuracy test were used accordingly. This research has been approved by the Institutional Review Board at the Kermanshah University of Medical Sciences (KUMS.REC.1394.396).

## RESULTS AND DISCUSSION

Total 169 (56%) of the participants in the study were male and 133 (44%) were female. The mean age of participants was  $29.7 \pm 12.23$ , the youngest and the oldest samples were 14 and 92, respectively.

Mean duration of hospitalization in patients was  $15.56 \pm 12.4$  hours. The mean duration of hospitalization for men was longer than women, 15.84 against 12.88 h however, there was no meaningful statistics found in this regard.

The mean interval between consumption and hospitalization was  $3.24 \pm 3.54$ . The average interval from consumption and hospitalization was longer for women ( $3.26 \pm 3.6$ ) in comparison to men ( $3.17 \pm 3.5$ ). The longest and shortest interval was observed among men which were 24 hours and 15 minutes, respectively.

A history of addiction, suicide, poisoning and hospitalization due to mental illness among the sample were reported 11.2, 8.27, 3.64 and 6.95%, respectively. Among the samples under study, the highest record was reported for addiction which suggested 34 patients (11.2%).

About 105 (34.7%) had difficulties in returning to work, a significant relationship was not found between gender and problems in returning to work ( $p = 0.234$ ). Among the 105, 18 individuals were reported as addicts and 18 had history of committing suicide, there was no meaningful relationship found between addiction and problems in returning to work ( $p = 0.158$ ). However, there was a meaningful relationship between addiction and history of committing suicide ( $p = 0.001$ ).

About 91 individuals delayed before returning to work. Among the 91 individuals, 15 were recognized as addicts and 17 had a history of suicide. There was no meaningful relationship found between delay in returning to work and gender ( $p = 0.588$ ) and also, there was no meaningful relationship between addiction and delay to return to work ( $p = 0.213$ ).

Total 58 people had balance problems or the inability to walk. A significant correlation was found between gender and imbalance in walking after discharge ( $p = 0.035$ ). There was no meaningful relationship between addiction and balance disorders ( $p = 0.075$ ) and history of suicide ( $p = 0.264$ ).

A total of 72 people were sleepy again and 23 people did not report this problem. Of the 72 patients, 15 reported their addiction and 19 had a history of suicide. Falling or head trauma after discharge showed no meaningful relationship with gender ( $p = 0.35$ ) and addiction ( $p = 0.386$ ) however, the relationship was significant with a history of suicide ( $p = 0.000$ ).

A total of 18 people suffered falling or head trauma because of dizziness or drowsiness. There were significant relationships between the frequency of sleepiness and gender ( $p = 0.045$ ) and addiction and the problem of food intolerance ( $p = 0.037$ ) however, there was no meaningful relationship between sleepiness and suicide ( $p = 0.237$ ).

Among all patients, 11 families reported difficulties to take care of their patients after their discharges. There were no meaningful relationships reported between difficulties to take care of the patient and gender ( $p = 0.702$ ) and addiction and history of suicide ( $p = 0.536$ ). Among the 11 cases mentioned above, 3 regretted their self discharge.

There was a meaningful relationship between a history of mental illness and re-sleepiness, falling and head trauma ( $p = 0.034$ ). Mortality rate was zero; no deaths were reported during the study.

The reason to poisoning was unknown among 33 patients (10.9%), 51 (16.8%) took poison and 218 cases were poisoned using medication (72.2%) which was the largest recording. Dividing the cases of poisonings, there were 9 cases of drugs apnea, 2 cases with cyanosis, 6 cases of agitation and four others were added in the course of hospitalization, while their vital signs were stable.

Aspiration was observed in no patients. The 2 individuals were admitted with loss of consciousness, where one used clonazepam and 50 others took nitroglycerin and one consumed tramadol and had a history of addiction. Seizures were observed in 5 patients while aspiration was not reported in any cases. The 3 patients had respiratory distress at the time of admission and two of them were aspirated and the other suffered seizure again during the course of hospitalization.

There was no fever reported in the cases of poisoning for unknown reasons or with poison however, there were 16 cases of fever in patients suffering from drug toxicity after their discharge.

Table 1: Frequency of consciousness based on poisoning cases

Reasons to poisoning	Frequency	Percentage
<b>Unknown</b>		
Low consciousness	7	17.5
Conscious	22	30
Sleepiness	11	27.5
<b>Drugs</b>		
Low consciousness	28	16.56
Conscious	98	57.98
Sleepiness	43	25.44
<b>Poison</b>		
Low consciousness	3	6.52
Conscious	43	93.47
Sleepiness	-	0

A total of 12 patients with drug toxicity and 4 patients with toxin poisoning needed to revisit a doctor after discharge; however, no further visits were reported among poisoning with unknown reasons (Table 1).

The frequency of low consciousness on drug poisoning and toxin poisoning were the highest and the lowest, respectively. Sleepiness was highest for drug toxicity and the lowest for toxin poisoning. The highest consciousness level was reported in the case of toxin poisoning but the lowest in poisoning with unknown reasons. There was a meaningful relationship between vital signs at discharge and return to work which suggested longer pauses at return to work among patients with instable conditions ( $p = 0.02$ ).

A meaningful relationship was found between stability of vital signs at discharge and balance disorders or difficulty to walk which suggested higher balance disorder with patients with less stable conditions ( $p = 0.01$ ). Also, there was no meaningful relationship between pause to return to work and unstable conditions ( $p = 0.041$ ) (Table 2). No meaningful relationship was reported between stable vital conditions at discharge and sleepiness which showed no significant relationship between sleepiness and unstable conditions ( $p = 0.195$ ). In addition, stable vital signs at discharge and re-anesthesia showed no significant relationship which suggested no significant association with re-anesthesia and unstable conditions ( $p = 0.502$ ). Considering the impact of sustainability of vital signs at the time of discharge and problems with food intolerance showed no significant relationship which caused no meaningful relationship between problems with food intolerance and unstable conditions ( $p = 0.299$ ). also, no meaningful relationship was reported between stable vital signs at discharge and falling or head trauma due to dizziness or sleepiness; it also did not report a meaningful relationship between falling and head trauma ( $p = 0.758$ ).

Average naloxan stat dose was  $2.27 \pm 2.3$  which included at least 1 to the most 16 injections. Average maintenance naloxan was  $1.36 \pm 0.85$  injections per hour. Naloxan stat and maintenance doses showed no

Table 2: The effect of vital signs at discharge on difficulties in returning to work

Vital signs	Frequency (%)	p-value
<b>Stable</b>		
Difficulties to return to work	63	0.02
Without difficulties to return to work	98	
<b>Unstable</b>		
Difficulties to return to work	42	
Without difficulties to return to work	99	

Table 3: Naloxan dose induced

Naloxan	Patients	Least	Most	Average
Naloxan maintenance per day	56	1	30	$10.64 \pm 6.9$
Naloxan stat	49	1	16	$2.26 \pm 2.29$
Naloxan maintenance per hour	30	1	5	$1.36 \pm 0.85$
Listwise	21	-	-	-

meaningful relationship with given complications such as pause or problems to return to work and lack of balance or sleepiness (Table 3). The 51 patients (16.88%), 11 patients (3.46%) and 43 patients (14.28%) were not admitted to leave the hospital by physician order due to continued or recent discontinuation of naloxan and long-term consumption of opium (tramadol), respectively. Also, 35 patients (11.58%) and 84 other patients (27.81%) were not admitted to discharge due to failure to report the tests and no improvement in symptoms of poisoning.

The mean duration of hospitalization was  $15.56 \pm 12.4$  h and the mean interval between takings up and hospitalization was  $3.24 \pm 3.54$  h. According to the instructions of the Ministry of Health and Medical Education, length of stay in the emergency department has been set up to 6 h. Still, a significant number of patients remain in a longer time (Anis *et al.*, 2002) which corresponded to the results from the present study. It could happen due to improper medical care offered to patients in emergency departments. Short-term hospitalization in these patients indicated that a visit within 24 h at the morning shift was not enough to determine conditions of most of the patients. A further determination in 12 h intervals could be helpful in the case.

In the present study, no significant difference was reported between genders in terms of taking up and visit to hospital ( $p = 0.873$ ) and hospitalization ( $p = 0.279$ ). In a similar study, Hwang *et al.* (2003) suggested a meaningful relationship between gender and discharge on personal satisfaction. However, they reported no meaningful relationship between age and discharge on personal satisfaction. Results from the present study corresponded to the results given (Brook *et al.*, 2006; Fiscella *et al.*, 2007).

The results from the present study showed a significant relationship between the pauses in returning to work and history of suicide ( $p = 0.001$ ). The analysis showed that poisoning on the purpose of committing

suicide was meaningful to both the problems to return to work and start working which could stem from spiritual and mental motivation to continue normal life. Lack of social activity appears to be normal among individuals who do not have the motivation to continue living.

The relationship between the lack of ability to walk and gender can represent higher physical ability and mental standards among men than women. Also in this study, 72 subjects under study experienced sleepiness again. Among the 72 patients, 15 patients had a history of addiction and 19 individuals reported history to commit suicide. Re-sleepiness after discharge showed no meaningful relationship with gender ( $p = 0.35$ ) and addiction ( $p = 0.386$ ). However, it was meaningfully related to suicide history ( $p = 0.000$ ) which could suggest their lack of motivation to live. It is a significant statistics and patients should be warned about the probable risks of discharge on personal satisfaction; creating such knowledge among patients could lead to fewer cases of DAMA.

In the present study, 16 patients reported their need to revisit a physician after discharge. Statistical analysis showed a meaningful relationship between revisiting a physician and gender ( $p = 0.138$ ), addiction ( $p = 0.259$ ) and history of committing suicide ( $p = 0.143$ ). Berger suggested that patients requesting discharge against medical advice were staying longer at hospitals and, accordingly, did not get desired treatment outcomes (Chan *et al.*, 2004). Also, Anis reported that patients with DAMA had more cases of revisiting physicians in comparison to the ones who were admitted to discharge by doctors. Furthermore, patients with DAMA experienced re-admission within 35 days after the first discharge and their length of stay was longer than the first admission (Choi *et al.*, 2011).

In this study, families of 11 patients requesting DAMA reported difficulties to take care of their patients. Data analysis suggested no meaningful relationship between difficulties to take care of the patients and gender ( $p = 0.702$ ), addiction ( $p = 0.06$ ) and history of suicide ( $p = 0.536$ ). Also, among the 11 families reporting difficulties to take care of their patients after discharge, 3 cases regretted their discharge while among all 288 patients under study only 2 patients regretted their decision on discharge. Also, mortality rate was reported zero in the present study and no cases of re-hospitalization were seen. Most of the studies on the issue focused on the mortality rate of the patients requesting DAMA. Fiscella *et al.* (2007) investigated patients with heart attacks and reported that patients who asked for discharge on their personal willingness had less follow up treatments, shorter length of stay and fewer

revascularizations practices than others. Also their risk of death or re-hospitalization was 40% more (25) that did not match to the results from the present study.

## CONCLUSION

Considering the complications after discharge among patients with poisoning including anesthesia, dizziness, sleepiness, lack of balance, fever, etc., it seems necessary to inform the patients about the probable risks of discharge against medical advice in the cases of drug poisoning.

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