

## Importance of Intravenous Fluid administration in Patients' Reference to the Emergency Department from Patients and Their Companions' Point of View

Hastalar ve Refakatçiler Açısından Acil Servise Başvuran Hastalarda İntravenöz Sıvı Verilmesinin Önemi

Alireza Ala<sup>1</sup>, Samad Shams Vahdati<sup>1</sup>, Elham Kheslati<sup>2</sup>, Babak Abri Aghdam<sup>2</sup>, Sama Rahnemayan<sup>3</sup>

<sup>1</sup>Emergency Medicine Research Team, Tabriz University of Medical Sciences, Tabriz, Iran

<sup>2</sup>Faculty of Medicine, Islamic Azad University, Tabriz Branch, Tabriz, Iran

<sup>3</sup>Student Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran

### ABSTRACT

**Objectives:** In this study, we evaluated the importance and effect of fluid therapy in patients referred to the emergency department in terms of patient satisfaction from recovery.

**Methods:** In this descriptive analytical study, 215 patients and 290 companions were included. Patients who were prescribed intravenous fluids in the emergency room of a university hospital, and their companions were asked questions about the importance of fluid therapy in improving their clinical symptoms and filled a questionnaire about the importance of fluid therapy in the process of patients' recovery.

**Results:** Overall 54.9% of patients and 43.1% of their relatives believed that they cannot recover unless they receive IV fluid therapy with suitable medicine. Also 97.2% of patients and 96.6% of their companions thought that drugs effects increase if they are administered with IV fluid.

**Conclusions:** Based on the findings of this study, unfortunately the majority of patients and patients' companions commented on a topic outside their specialty despite not having sufficient and academic information about treatment and medicine. The effectiveness and usefulness of serum therapy has also been acknowledged.

**Keywords:** Fluid therapy; trauma patient, internal patient

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### ÖZET

**Amaç:** Bu çalışmada acil servise başvuran hastalarda sıvı tedavisinin önemi ve iyileşmeden hasta memnuniyeti açısından etkisini değerlendirdik.

**Yöntem:** Bu tanımlayıcı analitik çalışmaya 215 hasta ve 290 refakatçi dahil edildi. Bir üniversite hastanesinin acil servisinde intravenöz sıvı reçete edilen hastalara ve refakatçilerine, sıvı tedavisinin klinik semptomlarını iyileştirmedeki önemi hakkında sorular soruldu ve hastaların iyileşme sürecinde sıvı tedavisinin önemi hakkında bir anket doldurdu.

**Bulgular:** Hastaların %54,9'u ve yakınlarının %43,1'i uygun ilaçla IV sıvı tedavisi görmedikçe iyileşemeyeceklerine inanmaktadır. Ayrıca hastaların %97,2'si ve refakatçilerinin %96,6'sı IV sıvı ile verildiğinde ilaçların etkilerinin arttığını düşünmüştür.

**Sonuç:** Bu çalışmanın bulgularına göre ne yazık ki hastaların ve hasta refakatçilerinin çoğunluğu tedavi ve ilaç konusunda yeterli ve akademik bilgiye sahip olmamalarına rağmen uzmanlık alanları dışında bir konu hakkında yorum yapmışlardır. Serum tedavisinin etkinliği ve kullanışlılığı da kabul edilmiştir.

**Anahtar Sözcükler:** Sıvı tedavisi; travma hastası, dahiliye hastası

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**ORCID IDs:** A.A.0000-0001-8231-2937,S.S.V.0000-0002-4831-6691,E.K.0000-0002-7550-6124,B.A.A.0000-0002-7944-3183,S.R.0000-0003-0641-4178

**Address for Correspondence / Yazışma Adresi:** Sama Rahnemayan, MD Tabriz University of Medical Sciences, Golgasht street, Tabriz, Iran. E-mail: samarahnemayan@gmail.com

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## INTRODUCTION

The request for emergency medicine services is growing globally (1). Numerous aspects have been identified to influence the rate of presentation in emergency departments (2). Sociodemographic features, such as the level of education, income, and also existence of social support systems affect the rate of demands to emergency departments (3).

Several studies have demonstrated that specific diagnostic methods and a belief toward the requirement for medical treatment in these methods have a roll in the increasing use of emergency departments (4–6). Intravenous (IV) fluid administration is one of the therapeutic methods that are widely used in emergency departments.

It is important to maintain an adequate volume of tissue perfusion, blood circulation and electrolyte balance in emergency patients. Insufficient volume and fluid supply to the body lead to systemic hypo-perfusion, tissue hypoxia, and acidosis (7,8). Thus, special attention is required to replace intravascular volume accurately in these patients. Various compounds including colloidal and crystalloid solutions have been suggested for this purpose. These solutions cause more side effects than simple blood-thinning (9).

Studies have been performed on patients treated with high-chlorine solutions compared to low-chlorine solutions and the problems of hyperchloric acidosis and electrolyte disturbance caused by high-chlorine solutions have been identified. Hyperchloremic metabolic acidosis and electrolyte disturbance caused by some of these crystalloids can disrupt patients' recovery after anesthesia and postoperative complications and cause many problems for the patient and physician (10,11).

Considering that only few studies have been conducted on the importance of IV fluid therapy from the patients and their companions' point of view, we decided to evaluate the effect of fluid therapy in patients referred to the emergency department in terms of patients' satisfaction from the recovery.

## METHODS

In this descriptive-analytical study, all patients referred to the emergency department of a university hospital from the first of February 2019 to the first of July 2020 in the census from 9 am to 5 pm were enrolled. Patients or companions of patients who did not consent to cooperation or were under 18 years of age were excluded from the study.

Patients, who were prescribed intravenous fluids in the emergency room, including trauma and internal medicine patients and patients who presented with loss of consciousness, were asked about the importance of fluid therapy in improving their clinical symptoms. Also, the companions of these patients entered the study and filled out a questionnaire related to the importance of fluid therapy in the process of patients' recovery. Questions related to the research were asked orally from patients and companions when they were discharged; and then entered in the checklist. Therefore, there was no need to obtain written consent to enter the study and people who agreed to participate in the study.

Data analysis was performed using SPSS23 software. Descriptive statistics were used as frequency tables and indicators such as mean and standard deviation to describe demographic characteristics, vital signs of the patient. Also, to analyze inferential statistics, the Pearson test and regression calculation were used and p values below 0.05 were considered significant.

Pearson correlation and logistic regression were used to investigate the possible relationship between the studied factors. In the descriptive section, the frequency (percentage) was used to declare qualitative variables. Quantitative variables, if their distribution is normal, were declared using the mean (standard deviation). The mid-quarter domain was used to summarize the information. Pearson regression statistical method was used to examine the relationship between the collected data. This study was approved by research ethics review committee under the code IR.IAU.TABRIZ.REC.1399.038.

## RESULTS

Overall 505 patients and patient relatives were included in the study, which according to the Kolmogorov-Smirnov statistical test, follows the normal

distribution in terms of age (P value = 0.162). Of 505 participants 215 (42.6%) were patients and 290 (57.4%) were patient relatives.

Also, 264 (52.3%) were male and 241 (47.7%) were female. The mean age of participants was  $40.94 \pm 12.35$  years with a minimum age of 16 and a maximum of 72 years (CI95%). Figure 1 shows the educational level of participants.

Patients' opinions about diseases that require serum administration are shown in Table 1. Overall 54.9% of patients and 43.1% of their relatives believed that they cannot recover unless they receive IV fluid therapy with suitable medicine. Also 97.2% of patients and 96.6% of their companions thought that drugs effects increase if they are administered with IV fluid. The answer of patients or their companions when asked about the causes and methods of serum and fluid therapy injections is summarized in Table 2.

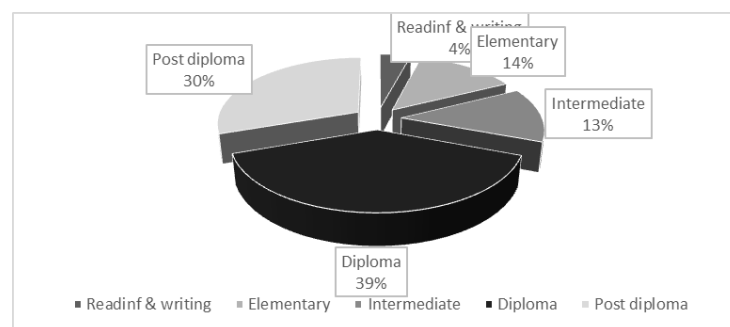


Figure 1- Educational level of the participants

Table 1- Patients' opinions about diseases that require serum administration.

Chief complaint		Patient			Relative		
		Not need	Need	No Idea	Not need	Need	No Idea
Loss of consciousness		18 8.4%	177 82.3%	20 9.3%	27 9.3%	238 82.1%	25 8.6%
Diarrhea		2	212	1	2	286	2
		0.9%	98.6%	0.5%	0.7%	98.6%	0.7%
Fever		3	211	1	2	282	6
		0.9%	98.6%	0.5%	0.7%	97.2%	1.2%
Vomiting		4	209	2	2	284	4
		1.9%	97.2%	0.9%	0.7%	97.9%	1.4%
Pain		13	191	11	20	253	17
		6.0%	88.8%	5.1%	6.9%	87.2%	5.9%
Vertigo		16	193	6	29	248	13
		7.4%	98.8%	6.0%	10.0%	85.5%	4.5%
Headache		52	150	13	73	190	27
		24.2%	69.8%	2.8%	25.2%	65.5%	9.3%
Sore throat		68	141	6	107	163	20
		31.6%	56.6%	2.8%	36.9%	56.2%	6.9%
Cough		74	124	17	125	143	22
		34.4%	57.7%	7.9%	43.1%	49.3%	7.6%

**Table 2-** Patients' answers about the reasons and methods of serum administration.

	Patient		Relative		
	Agree	Disagree	Agree	Disagree	
It strengthens the body	135	80	164	126	
	62.8%	37.2%	56.6%	43.4%	
It replaces substances that are lacking in the body	134	81	160	130	
	62.3%	37.7%	55.2%	44.8%	
It strengthens the immune system	148	67	179	111	
	68.8%	31.2%	61.7%	38.3%	
It has a therapeutic effect	210	5	285	5	
	97.7%	2.3%	98.3%	1.7%	
It provides psychological improvement	198	17	266	24	
	92.1%	7.9%	91.7%	8.3%	
It kills germs	162	53	188	102	
	75.3%	24.7%	64.8%	35.2%	
It prevents diseases worsening	192	23	241	49	
	89.3%	10.7%	83.1%	16.9%	
Drug administration with IV fluid is the most effective treatment method	215	0	289	1	
	100%	0%	99.7%	0.3%	
Drug administration with IV fluid produces earlier healing than other treatment methods	198	17	251	39	
	92.1%	7.9%	86.6%	13.4%	
Drugs effects increase if they are administered with IV fluid	209	6	280	10	
	97.2%	2.8%	96.6%	3.4%	
I cannot recover unless I receive IV fluid therapy (with suitable medicine)	118	97	125	165	
	54.9%	45.1%	43.1%	56.9%	

## DISCUSSION

In our study, in the trauma and emergency department, the literacy level of patients was 4.2% illiterate, 13.5% had primary education, 13.1% had cycle literacy, 39% had diploma literacy and 30% had higher literacy. In a study by Ozgur et al., 90.3% of health workers indicated that the demand for IV injections or fluid therapy leads to improper usage of emergency departments. In this study, approximately 25% of participants stated that they thought IV injections and fluid therapy had no beneficial role without other medications. Also 25% of participants reported that administering medications through IV injections is the most effective treatment. Thereby, most participants stated that the use of IV injections and fluid therapy in emergency rooms affects their likeliness to refer to these departments for receiving health services. It can be concluded that receiving medication through IV injection and fluid therapy is more beneficial from the patients' point of view and the treatment method quickly affects the selection of emergency departments. Age, sex, and marital status did not affect the preference of emergency departments for fluid therapy, but education level influenced this choice. Emergency departments are more likely to receive IV fluid therapy in high school or lower school graduates. These findings can be correlated with the positive role of education in increasing the level of awareness. However, more studies are needed to precisely describe this relation (12).

In our study of trauma and internal medicine, 59% of patients claimed that fluid therapy strengthens the body and also compensates for the lack of nutrients in the body. About 65% of patients think that fluid therapy strengthens the immune system. Also, 68% of patients think that fluid therapy can eliminate the infection alone and 85% think that fluid therapy can stop the progression of the disease and almost 100% of patients think that injecting the drug with serum is more effective.

In a study by Cohen et al., advanced cancer patients and their relatives, found that treatment with IV fluids reduced pain and increased analgesia.

This study also demonstrated that contributors believed that IV fluids have a role in reducing tiredness through increasing energy levels and are capable of improving preserving human self-esteem and quality of life. They also reported that people believe that IV fluids allow the body to use the substances and electrolytes it needs. Patients and their companions also stated that hydration through IV fluids enhanced their mental state and repaired their body, and promoted soul (13).

Malia et al. conducted a study on patients with end-stage cancer, and stated that almost one third of participants thought that hydration through IV injection is a good alternative to nourish the body and, it is needed in order to survive just like oxygen (14). Also in a similar article, Morita et al. examined end-stage cancer patients living in care homes and reported that almost three forth of patients and also 85% of their relatives thought they could not receive their needed nutrients without IV hydration (15). Nevertheless, Chiu et al. stated that end-stage cancer patients, believed that therapeutic fluids are only able to meet fluid requirements and cannot act independently (16). Also, in a study by Musgrave et al. patients with end-stage cancer and their families declared that former experience with the helpfulness of IV fluids had affected their desire for receiving medications through IV fluids (17).

## Conflict of interest

No conflict of interest was declared by the authors.

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