

In the name of God

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**The Prevalence of Substance Abuse Among the Epileptic Patients of Isfahan.**

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**Abstract:**

**Objective:** The aim of this study was to evaluate the substance abuse prevalence in epileptic patients who were referred to epilepsy clinics of Isfahan University of Medical Sciences.

**Method:** This study was conducted on 1921 epileptic patients in Isfahan. The information about substance abuse and also the seizure attacks characteristics were collected by means of standard questionnaires.

**Results:** 60 patients (3.1% of all patients) used the illicit substances. The mean of their ages was  $30.3 \pm 1.25$  years. The mean of seizure history was  $4.66 \pm 0.98$  years. The most prevalent type of attacks among the patients was generalized tonic clonic type (45 patients-75%) and the most frequent substance which was abused was Tramadol (25 patients- 41.7%).

**Conclusions:** Drug abuse seems to be more frequent in these patients than general population. Epileptic patients seem to be more sensitive to these substances. On the other hand, some of these substances like Tramadol, which is one of the most prescribed analgesics in the world, cause seizures as an important adverse effect.

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**Keywords: Substance abuse, Epilepsy, Prevalence.**

**Introduction:**

The relationship between epileptic seizures and substance abuse has been known. For example, it was clarified in some studies that the prevalence of sei-

zures in patients who are depended to alcohol is about 9.9%.<sup>(1)</sup> Opioids have been known as convulsant and anti-convulsant agents.<sup>(2)</sup> Also In adult persons, recent heroin use can be an impor-

tant risk factor for seizure development.<sup>(3)</sup> It was reported in some studies that heroin withdrawal<sup>(4)</sup> and overdose of dextropropoxyphene<sup>(5)</sup> can cause seizure attacks too.

Tramadol may induce seizures in epileptic patients and in previously healthy population.<sup>(6)</sup> Also metamphetamine usage might have some neurologic side effects including of stroke, seizures and psychosis.<sup>(7)</sup>

On the other hand, in recent years, the rate of illicit drug abuse has been more greater than before throughout the world. Based on unofficial estimation of the United Nations Drug Control Program (UNDCP), the annual global rate of usage of these drugs is about 3.3 to 4.1% of the world's total population.<sup>(8)</sup> In Iran, we have no exact estimation of drug abuse prevalence. But one of the most recent studies which was done in Isfahan estimated that about  $5\pm 0.4$  percents of people had been used these substances.<sup>(9)</sup>

The incidence rate of epilepsy in our country as a developing country is about two times more than developed countries.<sup>(10)</sup>

Because of high prevalence of both problems in our society, the aim of this study was to evaluate the substance abuse prevalence in epileptic patients who were referred to epilepsy clinics of Isfahan University of Medical Sciences (IUMS).

#### **Methods:**

1921 epileptic patients were enrolled in the study between January 2006 and January 2010. The diagnosis of epilepsy in these patients was confirmed by expert neurologists.

In this study, patients were collected from epilepsy clinics of IUMS. After signing the written informed consent, they underwent a complete physical examination and also they were asked to fill the questionnaire. The information which was requested included: demographic data, a history about substance abuse (the type of the substance and the route of usage) and also some information about their seizures which were filled by the examiner (type of seizures, MRI and EEG results, and seizure duration). After that the data was analyzed with SPSS software version 16.

#### **Results:**

Among all of 1921 epileptic patients, 60 persons (3.1%) used the illicit substances. These patients included of 56 males (93.3%) and 4 females (6.7%). The mean of their ages was  $30.3\pm 1.25$  years (with a range of 18 to 64 years). The patients' demographic information is summarized in table 1.

The mean of seizure history was  $4.66\pm 0.98$  years. The patients suffer from these seizure types: generalized tonic clonic seizures (45 patients-75%), complex or partial seizures (12 patients-20%) and other types (3 patients-5%)(figure 1).

The patients' disease information is illustrated in table 2.

The frequency of substance abuse is summarized as: Tramadol (25 patients-41.7%), opium (17 patients- 28.3%), heroin and crack (4 patients- 6.7%), alcohol, sedatives and hallucinogens (each one 2 patients- 3.3%), hashish, methadone (each one 1 patient- 1.7%) and

using more than one substance (6 patients- 10%) (Figure 2).

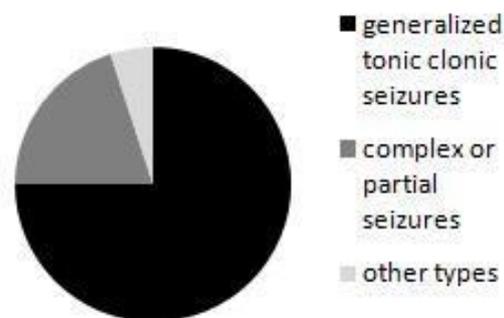


Figure 1. Seizure attack types among the patients

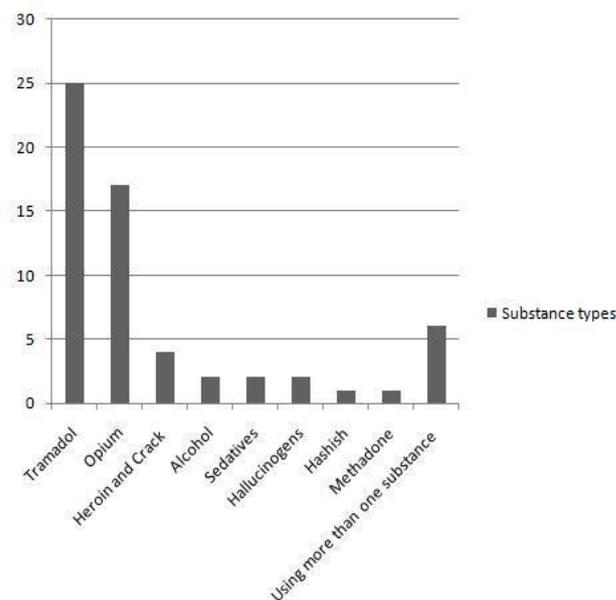


Figure 2. The prevalence of different substances usage among the patients.

Table 1. The demographic information of epileptic patients who used illicit drugs

Gender (male/female)	56/4	
Age (years)	30.3±1.25	93.3%/6.7%
Marital status (Single/married)	30/30	
<b>Education</b>		50%/50%
uneducated	1	
Lower than high school	26	1.7%
High school	24	43.3%
College education	9	40%
<b>Job (has/has not)</b>	40/20	15%
<b>Family history</b>		66.7%/33.3%
Negative Family history	46	76.7%
First degree family history	6	10%
Second degree family history	8	13.3%
IV drug user (heroin and crack)	4	6.7%

Table 2. The information about patients' disease

	Number	%
Seizure duration (years)	4.66±0.98	93.3%/6.7%
EEG (Abnormal/Normal)	14/46	23.3%/76.7%
CT scan (Abnormal/Normal)	1/59	1.7%/98.3%

**Discussion:**

There are controversies about substance abuse prevalence in Iran but it is estimated about 2.8 to 5.1 percents according to different studies. In this survey, its rate was 3.1 percents and in accordance

with the 0.5 to 1 percent prevalence of epilepsy in general population, drug abuse seems to be more frequent in these patients than general population.

In our survey, some of the substances like Tramadol seems to provoke seizures more than the others. But no enough

study was available about the onset of seizure after using of this substance. It is mentioned in some studies that the generalized tonic-clonic seizures happening most frequently within one day after tramadol usage because of its neurotoxicity. Tramadol induced seizures were more frequent in younger abusers with a longer duration of drug intake.<sup>(11)</sup>

In this study, opioids were in the second place of frequent abused substances. The role of opiates in mediating seizure activity was evaluated in previous studies, and it was suggested that opiate agonists had proconvulsive effects. The involvement of opiates in brain damage has been clarified but some other researches indicated that opiate antagonists could have neuroprotective effects, such as protection from damage produced by ischemia. There is high interest about opiate involvement in electrical-related activity and so various in vitro experiments were done to examine opiate modulation of neural events in specific neurons, structures and pathways.<sup>(12)</sup>

In contrast to other studies, alcohol abuse is less frequent in our survey, probably because of some religious and cultural limitations.

All of the patients who used heroin and crack were intravenous drug users and their seizures might be due to a massive amount of drug which was entered their bloodstream.

#### **Conclusion:**

This study showed that epileptic patients seem to be more sensitive to these sub-

stances because of low threshold of brain for cortical discharges and also because of using antiepileptic drugs and their drug interactions with these substances. So it is necessary for these patients to avoid from opioid and substance abuse.

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