

# Retrospective Analysis of the Intoxication Cases Applied to the Emergency Service

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## Abstract

**Objectives:** Together with the development of the modern technology, the new chemicals and pharmaceuticals entering our lives expose the humankind more and more to these agents. Our aim to conduct this study was to determine the types and causes of frequent intoxication cases applying to our emergency service, the required treatment and patient care methods by analyzing the patient files and to raise an awareness about intoxications.

**Materials and Methods:** Our study was a retrospective study prior to which the necessary permissions were obtained from Namık Kemal University Ethical Council of Non-Invasive Clinical Researches. Besides the demographic attributes of the patients, the mode of intoxication (accidentally, suicidal), how the intoxication happened (drugs, pesticides, detergent), consultation information (if any), requirement of antidote for treatment, the patients' being outpatient or hospitalized were determined and analyzed statistically.

**Results:** A total of 58 patients were included in our study. The age average of the included patients were  $34.05 \pm 15.22$ . Among the patients, 38 (65.5%) were female while 20 (34.5%) were male. 75.9% (44) of the cases were suicidal, and 24.1% (14) happened accidentally. There was previous psychiatric history in 27.6% (16) of the patients while there was no previous psychiatric history in 72.4% (42). Among the patients with previous psychiatric history, 15 (93.7%) of the intoxications were suicide attempt, while 29 (69%) of the patients without previous psychiatric history were suicide attempt. The difference obtained from the comparison of psychiatric history and intoxication type was statistically significant.

**Conclusion:** Intoxication cases apply to the emergency service with various reasons and frequencies. We presume that supporting and developing the emergency service in terms of knowledge and equipment will contribute to the medical care and prognosis of the toxicology patients

**Keywords:** emergency service, drug intoxication, suicide, toxicology

## Özet

**Amaç:** Modern teknolojinin gelişimiyle yaşamımıza giren yeni kimyasal maddeler ve farmasötik ürünler insanoğlunu bu ajanlara bağlı toksik etkilere daha fazla maruz bırakmaktadır. Bu çalışmayı yapmaktaki amacımız acil servisimize başvuran toksikoloji vakalarının dosyalarını irdeleyerek bölgemizdeki sık karşılaşılan zehirlenme türlerini, nedenlerini, gereken tedavi ve hasta bakımı yöntemlerini belirlemek ve zehirlenmelerle ilgili farklılık oluşturulmasıdır.

**Gereç ve Yöntem:** Çalışmamız retrospektif bir çalışma olup çalışmaya başlanmadan önce Namık Kemal Üniversitesi Tıp Fakültesi Girişimsel olmayan çalışmalar etik kurulundan onay alınmıştır. Hastaların demografik özellikleriyle beraber, zehirlenmenin oluş şekli (kazara, intihar), ne ile zehirlenme (ilaç, tarım ilacı, deterjan) gerçekleştiği, varsa konsültasyon bilgileri, tedavi için antidot gereksinimi, tedavilerinin ayaktan mı yoksa hastaneye yatış verilerek mi yapıldığı belirlenmiş ve elde edilen veriler istatistiksel olarak irdelenmiştir.

**Bulgular:** Çalışmamıza toplam 58 hasta dâhil edildi. Çalışmaya dâhil edilen hastaların yaş ortalaması  $34,05 \pm 15,22$  olarak belirlendi. Çalışmaya dâhil edilen hastaların 38 (%65,5)'i kadın 20'si (%34,5) erkekti. Olguların %75,9 (44)'u suicidal girişimi ile oluşurken %24,1 (11)'inde kaza ile zehirlenme durumu olmuştur. Çalışmaya dâhil edilen hastaların %27,6 (16)'sında geçmiş psikiyatrik öykü bulunmaktaydı %72,4(42) sinde ise geçmiş psikiyatrik öykü bulunmamaktaydı. Psikiyatrik öyküsü bulunan hastaların 15'inin (%93,7) zehirlenme türü suicidal iken ve psikiyatrik öyküsü bulunmayan hastaların 29'u (%69) zehirlenme türü suicidaldi. Psikiyatrik öykü ve zehirlenme türü karşılaştırıldığında elde edilen fark istatistiksel olarak anlamlıydı.

**Sonuç:** Sonuç olarak acil servise çeşitli neden ve sıklıklarla toksikoloji vakaları başvurmaktadır. Acil servis biriminin bilgi ve donanım açısından desteklenmesi ve geliştirilmesinin toksikoloji hastalarının tıbbi bakım ve prognozuna olumlu katkı sağlayacağını düşünmekteyiz.

**Anahtar kelimeler:** acil servis, ilaç intoks, suicidal, toksikoloji

## Introduction

The start of toxicology can be started with the history of humankind. In sixteenth century Paracelsus described poison

as "All things are poison and nothing is without poison; only the dose makes a thing not a poison." and founded the basis of modern toxicology. Alfred Swaine Taylor (1806-1880) said "A poison in a small dose is a medicine, and a medi-

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“... in a large dose is a poison.” in the same context. Together with the development of the modern technology, the new chemicals and pharmaceuticals entering our lives expose the humankind more and more to these agents. Moreover, the information producing developed countries obtain their industrial needs from the developing countries and increase the risk of intoxication by making the society being exposed more to the industrial wastes. Such substances especially drugs, cosmetics, pesticides, food additives, house cleaning substances and industrial chemicals spread over a large area and can exhibit toxicity depending on the dose. The studies on this subject will contribute to the inhibition of acute and chronic toxic effects of these factors, diagnosis and rational treatments, and also to development of the science of “Clinical Toxicology”.

Emergency services are the first clinics applied by either individual or collectively intoxicated patients. Moreover, emergency service education deals with several problems including especially the toxicology area.

Our aim to conduct this study was to determine the types and causes of frequent intoxication cases applying to our emergency service, the required treatment and patient care methods by analyzing the patient files and to raise an awareness about intoxications.

## Material and Methods

Our study was a retrospective study prior to which the necessary permissions were obtained from Namık Kemal University Ethical Council of Non-Invasive Clinical Researches (no: 46048792-050.01.04-E.). All intoxication cases applied to our emergency service between January 01, 2017 and January 01, 2020 were included in our study. The patient files were retrospectively analyzed and together with the demographic attributes of the patients, the mode of intoxication (accidentally, suicidal), how the intoxication happened (drugs, pesticides, detergent), consultation information (if any), requirement of antidote for treatment, the patients' being outpatient or hospitalized were recorded to the case report forms. The data obtained were analyzed statistically using SPSS 18 statistics program.

### Statistical Analysis

In order to test the normality of the distribution of parameters Kolmogorov-Smirnov test was used. Chi-square test was used to determine the relationship between categorical variables. The continuous variables were expressed as mean  $\pm$  standard deviation (SD).  $P < 0.05$  was regarded as statistically significant. All the statistical analyses were performed by using Statistical Program for the Social Sciences (SPSS) software, version 18.0 (SPSS Inc) and Analyze-It software, version 4.80 (Analyze-It Software Ltd).

**Table 1:** Demographic and general characteristics of the cases

	n(%)
Age	34,05 $\pm$ 15,12
Gender	
female	38 (%65,5)
male	20 (%34,5)
Psychiatric history	16 (%27,6)
Suicide attempt	44 (%75,9)
Accidental poisoning	14 (%24,1)

**Table 2:** Distribution of patients by months

Months	n(%)
February	2 (3.4%)
March	7 (12.1%)
April	8 (13.8%)
May	4 (6.9%)
June	3 (5.2%)
July	9 (15.5%)
August	2 (3.4%)
September	4 (6.9%)
October	5 (8.6%)
November	7 (12.1%)
December	7 (12.1%)

## Results

A total of 58 patients were included in our study. The age average of the patients were  $34.05 \pm 15.22$ . Among the patients, 38 (65.5%) were female while 20 (34.5%) were male. 75.9% (44) of the cases were suicidal, and 24.1% (14) happened accidentally (Table 1). 16 of the patients applied to the service in autumn, 9 in winter, 19 in spring and 14 in summer. There was no significant relationship between the season and intoxication type ( $p = 0.1$ ). However, there was a significant relationship between sex and intoxication type ( $p = 0.007$ ) (Table 2,3).

The average time of stay in emergency service of the intoxication patients with suicidal attempt was  $467.2 \pm 604.1$  minutes. It was  $1091 \pm 1500.1$  minutes for the accidentally happened intoxication cases. The relationship between the time of stay and the type of intoxication was not significant ( $p = 0.1$ ).

There was previous psychiatric history in 27.6% (16) of the patients while there was no previous psychiatric history in 72.4% (42). Among the patients with previous psychiatric history, 15 (93.7%) of the intoxications were suicide attempt, while 29 (69%) of the patients without previous psychiatric history were suicide attempt. The difference obtained from the comparison of psychiatric history and intoxication type was statistically significant ( $p = 0.04$ ) (Table 3).

**Table 3.** The comparison of gender, psychiatric history and seasons with intoxication type

	Intoxication type		
	Suicid	Accidental	
Gender			
female	33	5	p=0.007
male	11	9	
Psychiatric history			
with	15	1	p=0.04
without	29	13	
Seasons			
autumn	16	3	p=0.17
summer	11	3	
spring	9	7	
winter	8	1	

Stomach lavage was applied to 44.6% (27) of the cases, activated charcoal was given to 37.9% (22), antidote was required for the treatment of 3 patients, and psychiatric consultation was requested. The analysis of case outcomes revealed that 32 cases were discharged after tests and evaluations, 1 case was hospitalized in the service, 5 cases were hospitalized in the intensive care unit.

## Discussion

The importance of toxicology in emergency service education is long known. In 1983, The American College of Emergency Physicians declared that the emergency physicians should be qualified to interpret toxicological care, and that they should be prepared by training and by facility organizations to fulfill this function<sup>1</sup>.

A certain proportion of emergency service applications are due to intoxication all over the world. This proportion can be considered to vary depending on the region, years, and increasing population ratio. According to a study by Çakmak, around 5% of the emergency applications in France and Germany were intoxications<sup>2</sup>. The same study indicated that the same ratio was 0.46-1.57% in Turkey<sup>2</sup>. In our study the ratio of toxicology cases to all the other cases are below these values. We attribute this situation to the recent establishment of our emergency service and thus the low number of applied patients.

Socio-demographic attributes are among the most important situations affecting intoxications. The studies revealed that in our country suicidal intoxications occur frequently among females<sup>3,4,5</sup>. In the study by Akgün et al. 74.3 % of the total 70 patients included in the study were female (n=52), 25.7% were male (n=18), and age average was  $29.54 \pm 13.51$ <sup>6</sup>. The study by Çakmak reported that the sex distribution was 71.87% female and 28.13% male, and this was consistent with the data of Turkish National Drug and Poison Information Center in 2008<sup>2</sup>. The author attributed this situation to the women being lagged behind. Our re-

sults were consistent with the literature. We also think that higher female suicidal intoxication cases is due to the socio economical recadency of females. Moreover, we think that self-harming behavior in females may be a way of self-expression and modifying the reactions to others.

A close relationship between psychiatric disorders and suicidal ideation and behavior; and 5-40 times higher occurrence of suicide in psychiatric patients than other groups is already known<sup>7</sup>. In the study by Gür et al. the leading risk factor increasing the suicide attempt was indicated to be psychiatric disorders<sup>8</sup>. Moreover, evaluations of risk factors is clear to contribution to the reduction of repetitive attempts in these patients<sup>8,9</sup>. In our study, the intoxication type of the patients with previous psychiatric history was significantly suicidal. WE presume that the suicide attempt probability should be taken into consideration in the intoxication applications of patients with psychiatric history.

## Conclusion

To conclude, intoxication cases apply to the emergency service with various reasons and frequencies. We presume that supporting and developing the emergency service in terms of knowledge and equipment will contribute to the medical care and prognosis of the toxicology patients

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