

# Characteristics Of Poisoning Cases In Ankara, Turkey

C Kavalci, Y Çevik, M Özer, P Durukan, ? ?kizceli, G Kavalci

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## Abstract

**Introduction:** Poisonings are important causes of emergency department visits. It is especially very common in youths and women. In this study we aimed to define clinical and demographic features of poisoning cases admitted to our hospital.

**Material and Methods:** Poisoning cases admitted to emergency department of Ankara Atatürk Hospital between the dates of January 2006 and January 2007 were evaluated prospectively. Demographic features of patients, poisoning agents, aim of intake of poisonous agent, admission times, treatment methods, consultations, durations of emergency department treatment and outcomes were recorded. Data were expressed as Mean  $\pm$  Standard deviation, median and percentage.

**Results:** Between these dates, 0.5% of emergency department visits was poisonings. 412 patients were included in the study. Mean age of the patients was  $28.6 \pm 11.5$  years. %33.5 of the patients was male (n=138), 66.5% was female (n=274). Mean admission time to the hospital was  $175.0 \pm 228.2$  minutes. It was detected that 65% of the patients were poisoned with a single agent and 72.1% took the agent orally. The most common poisoning agents are tablets (59,5% n=245), carbon monoxide (CO) (20,6%, n=85) and alcohol (8.7%, n=36). 75.7% of the patients were discharged from the hospital, 2.9% were hospitalized and 21.4% were sent to another hospital. No death was observed

**Conclusion:** It was seen that poisoning cases are mostly seen in young females, occur mostly with single agents, and clinically require good care.

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## INTRODUCTION

Intoxication is the disruption of functions of a living organism by any agent<sup>1</sup>. Toxic substances have been used for centuries for suicide and/or homicide purposes. Intoxications have been one of the important health challenges of public from the ancient times. The annual incidence varies 0.02% to 9.3% in developing countries. A part of the admissions to emergency department are constituted by intoxication cases and can lead to serious results depending upon the agent and the admission time to hospital<sup>2,3</sup>. The prevalence is 0.4% according to data of State Statistics Institute<sup>4</sup>. Intoxication cases exhibit regional differences in terms of demographic characteristics, intoxication fashion and agents to be exposed. Intoxication can occur not only due to the voluntary intake of agent but also accidentally or during the treatment. While intoxication can be accidentally in children, it can occur as a result of suicidal intention. In this study it is aimed to identify the

clinical and demographic characteristics of intoxication cases admitting to our emergency department.

## MATERIAL AND METHODS

Patients admitting to Ankara Atatürk Research and Training Hospital between January 2006 and January 2007 were enrolled. The study was performed prospectively after the approval of the local ethical committee. Characteristics such as the age, gender, educational state of the patients and the hour and the weather when the intoxication occurred, admission time, intoxication agents, routes of contact with the substance, fashion of admission to emergency department, interventions done at the emergency department, consultations requested, time of waiting in the emergency department and the results (discharge, forwarding, hospitalization, death etc) were recorded to the prepared form. Data were assessed by loading to SPSS 11.0 package software. Data were expressed as mean  $\pm$  standard deviation, median and percentage.<sup>5</sup>, one-way Anova and Student t-test were used in statistical analysis and  $p < 0.05$  was accepted significant.

## RESULTS

During the study period it was detected that totally 74687 patients admitted to emergency service and that 0.5% of them admitted due to the intoxication. While 83% (n=342) of the patients came directly to the emergency department, 17% of them (n=70) were forwarded to emergency department. 33.5% of the patients (n=138) were male, 66.5% (n=274) of them were female. Female/male ratio was 2.0. Admission times to hospital after the intoxication were  $175.0 \pm 228.2$  minutes. Mean admission times were  $179.7 \pm 19.9$  minutes in males and  $172.7 \pm 13.6$  in females respectively. Statistically significant difference was found between the admission times in terms of gender ( $\chi^2 = 57.2$ ,  $p < 0.05$ ). Mean age of the patients was  $25.6 \pm 11.5$  years (Male:  $30 \pm 1$  years, Female:  $27.9 \pm 0.7$  years). No statistically significant difference was found between mean ages of the patients in terms of gender ( $F = 3.28$ ,  $p > 0.05$ ). The distribution of patients in terms of age groups and gender was shown in table 1. A statistically significant difference was found between age groups in terms of gender ( $F = 4.06$ ,  $p < 0.05$ ).

### Figure 1

Table 1: Age group distribution in terms of gender

Age group	Male (n)	Female (n)	Total (n)	Percentage (%)
16-25	60	147	207	50.2
26-35	41	74	115	27.9
36-45	23	32	55	13.3
46-55	6	14	20	4.9
56-65	6	3	9	2.2
>65	2	4	6	1.5
Total	138	274	412	100

4.1% of the patients were literate (n=17), 26.5% of the them were graduated from primary school (n=109), 48% of them were graduated from the high school (n=198), 21.4% of them had a undergraduate degree (n=88). A statistically significant difference was found between the educational state and the intoxication ( $t = 73.48$ ,  $p < 0.05$ ).

When intoxication events were examined in terms of seasons, it was seen that 26.9% of the patients were admitted in spring, 22.3% of them were admitted in summer, 21.4% of them were admitted in autumn and 29.4% of them were admitted in winter. A statistically significant difference was found between the seasons and the intoxication events ( $t = 43.76$ ,  $p < 0.05$ ).

When the relationship between the intoxication events and

the weather was examined it was observed that 62.9% of the patients admitted when the weather was open, 29.5% of them admitted when the weather was cloudy, 7.8% of them admitted when it was rainy. A statistically significant difference was found between the intoxication events in terms of weather ( $t = 46.29$ ,  $p < 0.05$ ).

The toxic substance intake in terms of gender is summarized in table 2.

### Figure 2

Table 2: Toxic substance intake in terms of gender

Gender	Suicide	Accidental	During the treatment
Male	58	68	12
Female	181	85	8
Total	239	153	20

A statistically significant difference was found between toxic substance intakes in terms of genders ( $\chi^2 = 23.67$ ,  $p < 0.05$ ). It was seen that while intoxications in female were usually for suicidal purposes, they were accidentally in males.

The most frequent intoxication causes are drugs (59.5%, n=245), carbon monoxide (C) (20.6%, n=85) and alcohol (8.7%, n=36). Other intoxication causes are summarized in table 3.

### Figure 3

Table 3: Intoxication causes in terms of gender

Agent	Male (n)	Female (n)	P
Drug	59	186	$\chi^2 = 24.04$ , $p < 0.05$
CO	35	50	$\chi^2 = 2.83$ , $p > 0.05$
Alcohol	21	15	$\chi^2 = 10.92$ , $p < 0.05$
Food	10	15	$\chi^2 = 0.50$ , $p > 0.05$
Corrosive substance	6	12	$\chi^2 = 0.00$ , $p > 0.05$
Organophosphate	3	4	$\chi^2 = 2.03$ , $p > 0.05$

The most frequent drugs leading to intoxication were analgesics (28.4%). The distribution of drugs causing intoxication in terms of gender is summarized in table-4.

Figure 4

Tablo 4: Drugs causing most frequently to intoxication in terms of gender

Agent	Male (n)	Female (n)	P
Analgesics	31	86	$\chi^2=3.59, p>0.05$
Antidepressant	17	88	$\chi^2=10.09, p<0.05$
Antibiotics	8	26	$\chi^2=1.62, p>0.05$
Cardiac	3	12	$\chi^2=1.27, p>0.05$
Antiepileptic	4	9	$\chi^2=0.45, p>0.05$

There was a statistically significant difference between either gender in drug and alcohol intoxication ( $p<0.05$ ), however, there was no significant difference in intoxications with other agents in terms of gender ( $p>0.05$ ).

65% of the patients ( $n=268$ ) were intoxicated by a single agent, 23.1% of them were intoxicated by two agents ( $n=95$ ), 11.9% of them ( $n=49$ ) were intoxicated by three or more agents. 72% of the patients ( $n=297$ ) took the agent by oral route, 27.2% of them ( $n=112$ ) took the agent by inhalation, 0.7% of them ( $n=3$ ) took the agent by dermal route.

The vital signs of the patients were as follows: mean systolic blood pressure was  $114.5\pm 11.5$  mmHg, diastolic blood pressure was  $73.7\pm 8.5$  mmHg, pulses were  $83.8\pm 10.1$ /minute. While gastric lavage was performed to 36.9% of the patients ( $n=152$ ), 51.2% of them ( $n=211$ ) were treated with active charcoal and antidote was given to 7.3% of them ( $n=30$ ). While 30.3% of the patients did not requested consultation, consultation from anesthesia department was requested for 50.7% of them and consultation from internal medicine was requested for 36.1% of them. The mean waiting time of the patients was  $426.3\pm 335.5$  minutes. 75.7% of the patients were discharged from the hospital where as 21.4% of them were forwarded, 2.9% of them were hospitalized. No death occurred.

## DISCUSSION

Intoxications are health problems leading to important mortality and morbidity provided that they are not treated in time. Suicide is the second most frequent death cause among the adolescent and young adults <sup>5</sup>. In the studies done, very different data were obtained about the intoxication frequency. Seydaoglu <sup>2</sup> et al reported a ratio such as 1.6%, Ozkose <sup>4</sup> et al reported a ratio such as 0.7%, Göksu <sup>6</sup> et al reported a ratio such as 0.7%, Karakaya <sup>7</sup> et al reported a ratio such as 5%, Pınar <sup>8</sup> et al reported a ratio such as 0.8%, Tüfekci <sup>9</sup> et al reported a ratio such as 2.4%. Our result is

also consistent with 0.5% ratio.

In literature, it has been reported that intoxication cases are rather seen in the younger age group and in females <sup>4,6,10,11</sup>. F/M ratio of 2.0 found in our study and 50.2% ratio in the 16 to 25 age group were found consistent with literature. We suggest that social problems such as unemployment, marriage etc affecting more this age group increase the ratio.

In the studies done, it was detected that the majority of the patients admitted to hospital in two hours <sup>12</sup>. In our study, this time was found as three hours. We suggest that this one-hour extension is caused by the insufficient headways of the mass transportation means providing the arrival to our hospital.

When the literature is surveyed, no data about the relationship between the intoxication events and seasons and weather was found. In our study we drawn the conclusion about that intoxication events were more frequent in spring and winter and in open, sunny weather. We suggest that to spend more time at home due to the cold weather may lead to depression in winter months.

When the studies done were examined, it was seen that there was not enough information about the educational state of the patients. Pekdemir et al <sup>13</sup> concluded that intoxications were more frequent in those graduated from high school (48.1%). We suggest that stress factors such as entrance examination to university, marriage, finding job can play role in this conclusion.

In the literature it was seen that the intoxications for suicidal purposes were more frequent than the accidental intoxications <sup>2,4,6,12,13,14</sup>. Our results are consistent with the literature. In the literature, drugs were reported as the most frequent intoxication agents <sup>2,4,7,9,12,13</sup> our results are also consistent with the literature. We suggest that by restricting the sale of non-prescribed drugs intoxication ratios may decrease. Then, we found CO and alcohol as the agents of intoxication. We suggest that CO intoxications will diminish by the use of LPG. In the intoxications by drugs, some others reported the analgesic drugs <sup>4,6,8</sup> as the most frequent agent and some others reported psychoactive drugs <sup>2,13,15</sup> as the most frequent agent. We also saw analgesic drugs as the most frequent agents. We suggest that restriction in the prescription of the antidepressant drugs is effective in this conclusion.

The ratio of intoxication by a single agent was reported as

62% by Pekdemir<sup>13</sup>. 65% of our patients were intoxicated by a single agent. Gastrointestinal route was reported as the most frequent exposure route<sup>2,6,13</sup>. Our results are consistent with literature.

Active charcoal has an important place in the treatment of the intoxication cases.

Pekdemir<sup>13</sup> reported that he gave active charcoal to 64.4% of the patients. We gave active charcoal 51% of the patients. Our results are consistent with the literature.

It was seen that most of the patients were discharged from the emergency department after the 8-hour observation. Our results are parallel to these results. Most of the patients were discharged from the emergency department as a result of the observation. Various hospitalization ratios were reported in the literature. Pekdemir<sup>13</sup> reported that 25.3% of the patients were treated by hospitalizing. The ratio of 2.9% in our patients is much lower than that of literature. We suggest that since the beds in intensive care unit are full, our patients should have been followed in the emergency department so our hospitalization ratio is low.

The death ratios were reported as 0% to 5.8% in the literature<sup>4,13,16</sup>. Our results are consistent with the literature (0%). The early interventions in the intoxication cases decrease the death ratios.

### CONCLUSION

Intoxications occur more frequently in young females and for suicidal purposes. Most frequently single agent and the gastrointestinal route are preferred. It is rather seen in spring and winter months.

### CORRESPONDENCE TO

Assistant Prof. Dr. Cemil KAVALCI Trakya University  
Faculty of Medicine Emergency Department, Edirne,  
TURKEY Tel: +90 284 2357641-3006 e-mail:  
cemkavalci@yahoo.com

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**Author Information**

**Cemil Kavalci**

Trakya University Faculty of Medicine Emergency Department

**Yunsur Çevik**

Atatürk Research and Training Hospital, Emergency Department

**Mehmet Özer**

Atatürk Research and Training Hospital, Emergency Department

**Polat Durukan**

Erciyes University Faculty of Medicine Emergency Department

**İbrahim Kızceli**

Erciyes University Faculty of Medicine Emergency Department

**Gölsüm Kavalci**

Trakya University Faculty of Medicine Anesthesia Department