

CLINICAL STUDY

Trends in acute adult poisoning in a ten-year period in Turkey: factors affecting the hazardous outcome

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Abstract: *Aim:* The aim of this study was to evaluate the trends in acute adult poisoning data during ten years in university emergency department and determine the factors of hazardous outcome such as severe clinical status, prolonged hospital stay and mortality.

Material and methods: Medical records of 4569 poisoned patients admitted to Emergency Department (ED) of Cukurova University, School of Medicine in Adana.

Results: The mean age of 2988 females (65.4 % of the patients) was 24.5 ± 10.1 years, whilst the mean age of 1581 male patients (34.6 %) was 29.5 ± 13.2 years ($p=0.001$). Of the poisonings 80.0 % were suicidal; 69.4 % of the women and 30.6 % of the men committed suicide. The most common types of poisonings were ingestion of drugs (58.4 %), organophosphates (23.9 %) corrosives (3.4 %), mushrooms (1.7 %), methanol (2.4 %), carbon monoxide (2.1 %) and unknown (8.1 %). Of the total 96.0 % were discharged from emergency department, 1.4 % transferred to IC and 2.6 % died.

Conclusions: Young people and women are high-risk groups for acute poisoning and drug poisoning was found to be the most common type of poisoning. The poisoning by psychoactive drugs is increasing in the recent years and organophosphates poisoning seems to be still a serious problem in such an agricultural area. However, while the ratios of prolonged hospitalization and mortality are decreasing, suicidal poisoning is seriously increasing (Tab. 4, Fig. 2, Ref. 34). Full Text (Free, PDF) www.bmj.sk.

Key words: hospital stay, mortality, poisoning.

In developed countries, the annual incidence of both unintentional and deliberate human poisoning varies from 0.2–9.3 poison exposures per 1,000 inhabitants, and continues to increase annually worldwide. Acute adult poisoning usually results from attempted suicide and tends to be associated with low morbidity and mortality. Trends in poisoning have been changing in recent years, and the methods and substances used for self-poisoning have changed considerably over time.

The aim of this study is to evaluate the trends in acute adult poisoning data during ten years in university emergency department and determine the factors of hazardous outcome such as severe clinical status, prolonged hospital stay and mortality.

Material and methods

In this survey the data were obtained retrospectively from 1 January 1997 to 31 December 2006 from the Emergency De-

partment (ED) of Cukurova University, School of Medicine in Adana. The toxicology laboratory is not activated yet; so analytical confirmation of cases is lacking. Paediatric cases, bites, and stings were not included in this study. During the study period, 4569 patients more than 14 years old were analyzed.

Information about age, sex, date of poisoning, time of arrival, substance, reason of poisoning, level of consciousness, length of hospitalization, outcome of patients was collected for all poisoned patients by ED staff routinely.

The toxins were classified into 8 groups; drugs, carbon monoxide, mushrooms, caustics, pesticides, rodenticides, methanol and unknown. The drug were categorized as follows; analgesics, psychoactive drugs, anti-epileptics, cardiovascular drugs, multi-drug and others (antibiotics, antihistamines and vitamins). Majority of multi-drug group involved the combinations of psychoactive drugs and analgesics, analgesics and others. Hospital stay was categorized into two groups (less than 2 days – normal hospital stay and 3 days – prolonged hospital stay). Duration of arrive also categorized into two groups (less than 2 hours named early arrival, 3 hours named late arrival). According to clinical status 3 groups were identified; aware, confused-drowsy and unconscious; the prognosis of unconscious patients was considered as severe. Exposure and accidental poisoning were classified as unintentional-accidental poisoning.

Continuous variables such as age, hospital stay were analysed

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using student's t test, one-way ANOVA or Mann Whitney U and Kruskal Wallis test. The categorical data between the groups were analysed by using Chi square test. Odds Ratio and CI (confidence interval) were calculated. Three different multiple logistic regression models were performed to evaluate the independent risk factors affecting the hazardous outcome; severity, prolonged hospital stay and mortality. Results were presented as meanSD and n and percent (%). A p value less than 0.05 was considered significant. Statistical analyses were performed using the statistical package SPSS v 15.0.

Results

Out of the total 800 (17.5 %) patients were admitted in 1997–1998, 664 (14.5 %) in 1999–2000, 766 (16.8 %) in 2001–2002, 912 (20.02 %) in 2003–2004, 1417 (31.2 %) in 2005–2006. Of all emergency admissions during ten years the percent of poisoning was 1.6 %. A total of 4569 eligible patients were identified in the database for ten years; the mean age of 2988 females (65.4 % of the patients) was 24.5±10.1 years, whilst the mean age of 1581 male patients (34.6 %) was 29.5±13.2 years

Tab. 1. The patterns and the outcome of poisoning by years.

		1997-1998	1999-2000	2001-2002	2003-2004	2005-2006	Total
Gender	Male	262(32.8)	216(32.5)	247(32.2)	311(34.1)	545(38.2)	1581(34.6)
	Female	538(67.3)	448(67.5)	519(67.8)	601(65.9)	882(61.8)	2988(65.4)
Age groups	14-19	311(38.9)	250(37.7)	241(31.5)	293(32.1)	397(27.8)	1492(32.7)
	20-24	220(27.5)	170(25.6)	196(25.6)	240(26.3)	361(25.3)	1187(26.0)
	25-29	106(13.3)	82(12.3)	114(14.9)	130(14.3)	242(17.0)	674(14.8)
	30+	163(20.4)	162(24.4)	215(28.1)	249(27.3)	427(29.9)	1216(26.6)
Season	Winter	148(18.5)	149(22.4)	133(17.4)	145(15.9)	418(29.3)	993(21.7)
	Spring	249(31.1)	193(29.1)	212(27.7)	282(30.9)	466(32.7)	1402(30.7)
	Summer	213(26.6)	175(26.4)	239(31.2)	273(29.9)	334(23.4)	1234(27.0)
	Autumn	190(23.8)	147(22.1)	182(23.8)	212(23.2)	209(14.6)	940(20.6)
Reason	Suicide	602(75.3)	512(77.1)	590(77.0)	797(87.4)	1175(82.3)	3676(80.5)
	Accidental	198(24.8)	152(22.9)	176(23.0)	115(12.6)	252(17.7)	893(19.5)
Transfer	From other centers	545(68.1)	501(75.5)	569(74.3)	790(86.6)	1304(91.4)	3709(81.2)
	Directly	255(31.9)	163(24.5)	197(25.7)	122(13.4)	123(8.6)	860(18.8)
Intervention before admission	Yes	234(29.3)	223(33.6)	256(33.4)	425(46.6)	709(49.7)	1847(40.4)
	No	566(70.8)	441(66.4)	510(66.6)	487(53.4)	718(50.3)	2722(59.6)
Time of arrival	Early (0-2 hours)	151(18.9)	67(10.1)	77(10.1)	280(30.7)	390(27.3)	965(21.1)
	Late (3+ hours)	649(81.1)	597(89.9)	689(89.9)	632(69.3)	1037(72.7)	3604(78.9)
Clinical status	Aware	350(43.8)	236(35.5)	392(51.2)	606(66.4)	1073(75.2)	2657(58.2)
	Confused	264(33.0)	255(38.4)	227(29.6)	128(14.0)	194(13.6)	1068(23.4)
	Unconscious	186(23.3)	173(26.1)	147(19.2)	178(19.5)	160(11.2)	844(18.5)
Processes	Hospitalized	773(96.6)	659(99.2)	758(99.0)	800(87.7)	1214(85.1)	4204(92.0)
	Dead arrived	11(1.4)	4(0.6)	3(0.4)	3(0.4)	11(0.8)	45(1.0)
	Self discharge- Transferred	16(2.0)	1(0.2)	5(0.7)	96(10.5)	202(14.2)	320(7.0)
Hospital stay	1-2 day	422(52.8)	383(57.7)	437(57.0)	645(80.6)	1089(89.7)	2976(70.1)
	3+ day	378(47.3)	281(42.3)	329(43.0)	155(19.4)	125(10.3)	1268(29.9)
Prognosis	Total death	49(6.1)	14(2.1)	24(3.1)	20(2.2)	11(0.8)	118(2.6)
	Medical discharge	738(92.3)	650(97.9)	742(96.9)	876(96.1)	1382(96.8)	4388(96.0)
	Transferred	13(1.6)	0(0.0)	0(0.0)	16(1.8)	34(2.4)	63(1.4)
Substance (Toxins)	Drugs (overall)	442(55.3)	391(58.9)	482(62.9)	503(55.2)	850(59.6)	2668(58.4)
	Analgesic	76(9.5)	57(8.6)	67(8.7)	66(7.2)	101(7.1)	367(8.0)
	Psychoactive	119(14.9)	129(19.4)	192(25.1)	225(24.7)	308(21.6)	973(21.3)
	Anti epileptics	35(4.4)	33(5.0)	38(5.0)	18(2.0)	26(1.8)	150(3.3)
	Cardiovascular	16(2.0)	24(3.6)	28(3.7)	24(2.6)	34(2.4)	126(2.8)
	Other	36(4.5)	19(2.9)	20(2.6)	27(3.0)	42(2.9)	144(3.2)
	Multi-drug	160(20.0)	129(19.4)	137(17.9)	143(15.7)	339(23.8)	908(19.9)
	Organophosphates	230(28.8)	164(24.7)	197(25.7)	213(23.4)	286(20.0)	1090(23.9)
	Carbon monoxide	23(2.9)	5(0.8)	12(1.6)	17(1.9)	38(2.7)	95(2.1)
	Mushroom	10(1.3)	5(0.8)	11(1.4)	18(2.0)	34(2.4)	78(1.7)
	Corrosives	25(3.1)	27(4.1)	23(3.0)	31(3.4)	49(3.4)	155(3.4)
	Methanol	34(4.3)	22(3.3)	13(1.7)	12(1.3)	30(2.1)	111(2.4)
	Unknown	36(4.5)	50(7.5)	28(3.7)	118(12.9)	140(9.8)	372(8.1)
	Total		800(17.5)	664(14.5)	766(16.8)	912(20.0)	1427(31.2)

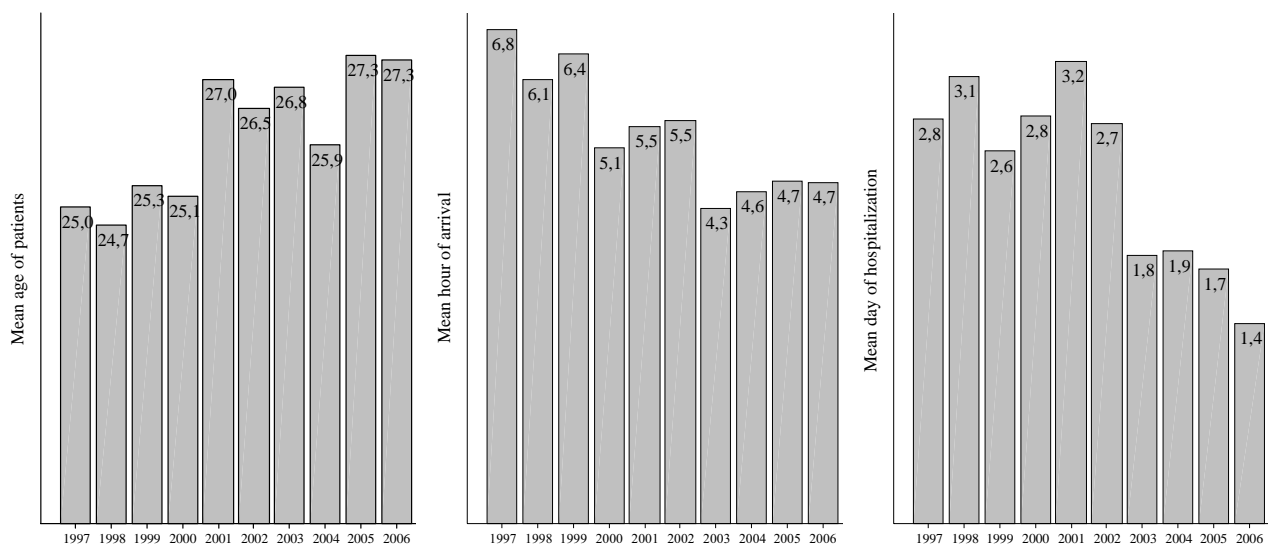
Tab. 2. Ratio of hazardous outcome; severity, prolong hospital stay and mortality according to sex.

Year	% of Severity			% of Prolong Hospital Stay [†]			% of Mortality [‡]		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1997	22.6	24.6	23.2	41.1	41.9	41.6	9.7	3.4	5.3
1998	23.5	23.0	23.3	57.7	54.7	55.8	8.3	6.5	7.1
1999	34.9	31.8	33.8	48.2	37.6	41.3	3.6	2.3	2.8
2000	19.3	17.0	18.6	47.2	42.5	44.0	2.8	0.9	1.5
2001	18.5	20.9	19.3	53.1	43.0	46.5	6.8	1.8	3.6
2002	18.1	21.2	19.0	41.7	38.8	39.6	8.1	0.4	2.6
2003	22.7	18.5	21.2	16.2	17.3	16.9	2.3	4.1	3.5
2004	17.5	19.9	18.3	19.1	21.9	21.0	2.3	0.9	1.3
2005	10.1	13.8	11.6	17.1	12.2	14.1	3.0	0.2	1.4
2006	9.4	13.3	10.8	8.3	5.4	6.4	0.4	0.0	0.2
Total	18.2	19.0	18.5	32.0	29.2*	30.2	4.2	1.8*	2.6

[†] total n=4204 (hospitalized patients were included)

[‡] total n=4506 (63 cases were excluded whose referred to IC and no knowledge about outcome)

*p<0.05

**Fig. 1. Mean distribution of age, arrival duration (hour) and hospital stay (day) by years**

($p=0.001$). Of the poisonings 80.0% were suicidal, 32.7% were younger than 20 years and 26.6% were older than 30 years. The most common types of poisonings were ingestion of drugs (58.4 %); organophosphates (23.9 %), corrosives (3.4 %), mushrooms (1.7 %), methanol (2.4 %), carbon monoxide (2.1 %) and remainder were unknown (8.1 %) (Tab. 1).

Organophosphates, carbamates and bipyridyliums were the pesticides agents mostly involved; clinical findings with these products were nausea, vomiting, abdominal pain, dizziness and headache. Among the overall drug poisoning; psychoactive drugs (36.5 %) were the most common cause of poisoning followed by multidrug (34.0 %), analgesics (13.8 %), anti-epileptics (5.6 %) and cardiovascular drugs (4.7 %) and all others (5.4 %). Psychoactive drug rate increased markedly during ten years.

Of the total 92.0 % were hospitalized; of these hospitalized patients 29.9 % had prolong hospital stay (mean hospitalization

was 2.3 ± 1.7 days), 6.6 % patient were discharged in 6 hours following first aids, 1.4 % were transferred to IC. Out of all patients 96.0 % were discharged from emergency department and 2.6 % died. Of whom 118 (2.6 %) patients subsequently died, 45 (1.0 %) were already dead when they arrived at the ED.

Ratio of hazardous outcome of poisoning by years according to sex is shown in Table 1. The decreasing ratio of severity, prolonged hospital stay and mortality were remarkable during the period of follow-up (Tab. 2).

Mean distribution of age, arrival duration (hour) and hospital stay (day) by years is shown in Figure 1. While the mean age of patients was increasing, arrival duration and hospital stay were decreasing by years.

A seasonal difference was observed between rate of admission and substance of poisoning. The number of patient was increasing in May and decreasing in December and January (Fig. 2).

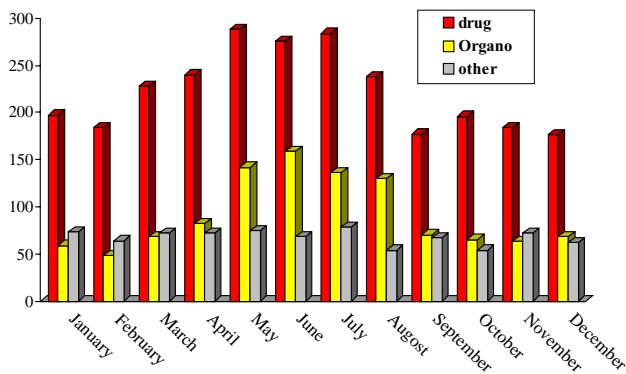


Fig. 2. Admission month according to most common substance of poisoning

The results of the univariate analyses of factors affecting the risk patterns and hazardous outcomes are shown in Table 3. Men and women showed different patterns; 69.4 % of the women and 30.6 % of the men committed suicide, women were younger than men and prolonged hospital stay and mortality rate were higher in men ($p < 0.05$ for all). The ratio of unconscious clinical status, prolonged hospital stay and mortality were significantly higher in patients who arrived late (after 2 hours). The risk of mortality was increasing in older, male, unconscious patients and patients transferred without medical intervention and arrived after 2 hours ($p < 0.01$ for all). It was decreasing by year ($p < 0.001$) and increasing in winter ($p < 0.001$). Of the total 118 patients died, Methanol (12.7 %) was the most frequent cause of death followed by carbon monoxide (10.6 %), Organophosphates (4.5 %) and mushrooms (4.0 %).

The Odds Ratio and CI of risk factors for hazardous outcome (unconscious clinical status, prolonged hospital stay and mortality) were calculated by three different multivariate logistic regression analyses (Tab. 4). Without medical intervention directly transferred patients, late arrival, suicidal reason and type of substance were found to be independent risk factors for unconscious clinical status. The significant risk factors in the model of prolonged hospital stay were: directly transferred patients, 1.34 (95 % CI=1.09–1.66); late arrival, 1.22 (95 % CI=1.00–1.49); suicidal reason, 1.37 (95 % CI=1.06–1.78), unconscious clinical status, 2.08 (95 % CI=1.73–2.50). OR for organophosphates, mushroom and corrosives were significantly higher compared to reference substances (drugs). The odds ratio of mortality was increasing in older, male, unconscious patients and patients transferred without medical intervention and it was decreasing by year. The type of toxins and season were found to be independent risk factors for mortality. A significant protective factor was 'year' for all three models.

Discussion

As is the case all around the world, acute poisonings constitute a serious health problem in Turkey as well. Acute intoxications

account for a considerable part of the admissions to emergency clinics, which have been on the rise in recent years. The rate and type of poisoning cases may greatly vary from one region to another (1). Thus, the present study examines the last 10-year period of the acute poisoning cases admitted to the emergency clinics in the Adana region in Turkey. The study enrolled deliberate suicide attempts as well as accidental poisoning cases in the period between 1997 and 2006. In the last ten years, all poisoning cases constituted approximately 1.7 % of all patients admitted to the emergency clinics. The statistical data obtained from the 112 emergency relief service of the Ministry of health in Adana, Turkey, revealed that the rate was 1.8 % in 2000, 3 % in 2001, and 3.8 % in 2002, while in 2007. Poisoning rates in the patients admitted to emergency clinics vary among regions (1). In an epidemiological study conducted in the Gaziantep (2) region in Turkey, poisoning rate was found to be 0.7 %, while it was 0.84 % in the Sivas region (3), 5 % in Ankara (4), and 1.76 % in Bursa (5). On the other hand, as shown by various studies, the rates of acute poisoning among the patients admitted to emergency clinics abroad are 0.11 % in Finland (6), 0.18 % in Oman (7), 0.9 % in the US (8). Obviously, these rates will increase if the patients die before reaching hospital among deliberate or accidental poisonings and those with mild poisoning symptoms attempted to be treated at home using traditional methods are also considered.

80 % of the cases who were admitted to the emergency clinic of the School of Medicine at Cukurova University with acute poisoning in the ten-year period in question were suicide attempts. Of these patients, 73.4 % were between the ages of 14 and 30. In a study conducted by Akkose et al (5), approximately 59 % of the patients admitted to the emergency clinic were in the age group of 14–25 years. In a study by Serinken et al (9), the patients aged between 17–40 constituted 88.72 % of all the patients in the study group. In another study carried out by Yilmaz et al (3), the patients aged between 16–24 constituted 58 % of all patients. These data are consistent with the literature and data from the other parts of the world (7, 10, 11). In Turkey, as well as in the remaining parts of the world, the incidence of suicide attempts among young adults in acute poisonings is higher than other age groups. In societies with lower socioeconomic levels, suicide attempts are more common among young age population, whereas in societies with higher economic levels, such attempts are often observed in the later years of life (12). As a developing country, Turkey exhibits a high rate of suicide attempts among young adults.

In the study, the female/male ratio was high in favor of females. 2988 (65.4 %) of the patients were female and 1581 (34.6 %) were male. A study by Townsend et al (13) reported the female patient rate to be 55.8 % and male patient rate to be 44.2 %. In a study conducted by Gutrie et al (14), the female/male ratio was 3/1 for patients admitted to emergency clinics due to poisonings. Suicide attempts are more common in females than males; yet, the incidence of committing suicide among men is higher (15, 16, 17). Men choose more serious and violent methods to commit suicide, while women usually tend to prefer tak-

Tab. 3. Univariate analyses of factors related with risk patterns; gender, age, reason, arrival time and hazardous outcome; severity, prolong hospital stay and mortality.

		Risky Patterns				hazardous outcomes		
		n and % of female	n and % of young age(≤21)	n and % of suicide	n and % of late arrive	n and % of severity	n and % of prolong hospital stay	n and % of mortality
Gender	Male	-	536(33.9)	1126(71.2)	1251(79.1)	301(19.0)	454(32.0)	65(4.2)
	Female	-	1530(51.2)*	2550(85.3)*	2353(78.7)	543(18.2)	814(29.2)	53(1.8)*
Age groups	14-19	1152(77.2)	-	1256(84.2)	1180(79.1)	299(20.0)	449(31.8)	28(1.9)
	20-24	777(65.5)	-	998(84.1)	923(77.8)	197(16.6)	310(28.0)	22(1.9)
	25-29	405(60.1)	-	556(82.5)	527(78.2)	130(19.3)	174(28.6)	10(1.5)
	30+	654(53.8)*	-	866(71.2)*	974(80.1)	218(17.9)	335(31.1)	58(4.9)*
Season	Winter	647(65.2)	468(47.1)	809(81.5)	770(77.5)	160(16.1)	229(25.1)	33(3.4)
	Spring	906(64.6)	633(45.1)	1096(78.2)	1105(78.8)	255(18.2)	411(31.4)	22(1.6)
	Summer	817(66.2)	540(43.8)	1010(81.8)	987(80.0)	230(18.6)	338(30.1)	31(2.5)
	Autumn	618(65.7)	425(45.2)	761(81.0)	742(78.9)	199(21.2)*	290(33.8)*	32(3.5)*
Reason	Suicidal	2550(69.4)	1744(47.4)	-	2873(78.2)	739(20.1)	930(27.1)	83(2.3)
	Accidental	438(49.0)*	322(36.1)*	-	731(81.9)*	105(11.8)*	338(43.8)*	35(4.0)*
Transferred	From other centers	2403(64.8)	1669(45.0)	2987(80.5)	2972(80.1)	756(20.4)	1038(30.4)	104(2.8)
	Directly	585(68.0)	397(46.2)	689(80.1)	632(73.5)*	88(10.2)*	230(29.1)	14(1.7)*
Intervention before admission	Yes	1259(68.2)	860(46.6)	1624(87.9)	1486(80.5)	348(18.8)	480(27.3)	28(1.5)
	No	1729(63.5)	1206(44.3)	2052(75.4)*	2118(77.8)*	496(18.2)	788(32.2)*	90(3.4)*
Time of arrival	Early (0-2 hours)	635(65.8)	444(46.0)	803(83.2)	-	126(13.1)	183(21.5)	18(1.9)
	Late (3+ hours)	2353(65.3)	1622(45.0)	2873(79.7)*	-	718(19.9)*	1085(32.4)*	100(2.8)*
Clinical status	Mild	2445(65.6)	1679(45.1)	2937(78.8)	2886(77.5)	-	907(26.7)	35(2.1)
	Severe	543(64.3)	387(45.9)	739(87.6)*	718(85.1)*	-	361(44.9)*	83(9.9)*
Hospital stay	1-2 day	1973(67.1)	1343(45.7)	2504(85.2)	2268(77.2)	443(15.1)	-	23(0.8)
	3+ day	814(64.2)*	601(47.4)	930(73.3)*	1085(85.6)*	361(28.5)*	-	50(4.0)*
Prognosis	Ex	53(44.9)	41(34.7)	83(70.3)	100(84.7)	83(70.3)	50(68.5)	-
	Medical discharge	2892(65.9)*	2007(45.7)*	3544(80.8)*	3459(78.8)*	755(17.2)	1213(29.5)*	-
Substance (Toxins)	Drugs (overall)	1895(71.0)	1231(46.1)	2640(99.0)	2111(79.1)	472(17.7)	534(21.4)	29(1.1)
	Analgesic	254(69.2)	191(52.0)	363(98.9)	276(75.2)	25(6.8)	54(16.7)	6(1.7)
	Psychoactive	715(73.5)	410(42.1)	967(99.4)	781(80.3)	233(23.9)	150(16.2)	8(0.8)
	Anti epileptics	106(70.7)	67(44.7)	147(98.0)	125(83.3)	40(26.7)	46(31.5)	1(0.7)
	Cardiovascular	92(73.0)	59(46.8)	123(97.6)	102(81.0)	5(4.0)	62(52.5)	1(0.8)
	Other	112(77.8)	94(65.3)	138(95.8)	106(73.6)	11(7.6)	19(14.5)	2(1.4)
	Multi-drug	616(67.8)	410(45.2)	902(99.3)	721(79.4)	158(17.4)	203(23.9)	11(1.2)
	Organophosphates	629(57.7)	494(45.3)	630(57.8)	878(80.6)	221(20.3)	554(55.0)	49(4.5)
	Carbon monoxide	49(51.6)	28(29.5)	6(6.3)	60(63.2)	17(17.9)	14(21.5)	10(10.6)
	Mushroom	48(61.5)	19(24.4)	0(0.0)	73(93.6)	5(6.4)	21(31.8)	3(4.0)
	Corrosives	91(58.7)	57(36.8)	35(22.6)	114(73.5)	4(2.6)	45(33.8)	4(2.7)
	Methanol	19(17.1)	38(34.2)	12(10.8)	92(82.9)	33(29.7)	27(29.3)	14(12.7)
	Unknown	257(69.1)*	199(53.5)*	353(94.9)*	276(74.2)*	92(24.7)*	73(20.9)*	9(2.4)*
Total		2988(65.4)	2066(45.2)	3676(80.5)	3604(78.9)	844(18.5)	1268(30.2)	118(2.6)

† total n=4204 (hospitalized patients were included)

‡ total n=4506 (63 cases were excluded whose referred to IC and have no knowledge about outcome)

ing drugs for suicide attempts. Particularly depending on the socio-cultural characteristics of rural societies, low social status and lack of economic freedom among women constitute the key factors that lead women to suicide attempts (18). Self-harming behaviors are more common among women than men. However, it is believed that self-harming behaviors are associated with suicide in men, while those in women are related to a motivation other than suicide (19). In our study as well, the ratio of females among patients attempting suicide with drugs is higher, which is consistent with the literature.

In poisoning cases, seasonal changes are identified in the number of suicide attempts, in particular. Patients with psychotic disorders, depression, and anxiety usually commit suicide in summer months. Light has an impact on the mood of all individuals (20). Serotonin, noradrenalin, and melatonin are also known to be effective in this mechanism. It is also well-known that sea-

sonal changes are not only significant in suicides and suicide attempts, but they are also very effective for individuals in coping with their anxieties (12).

In our study, 58.4 % of the patients who were admitted with acute poisonings had attempted suicide by drug overdose. 23.9 % of the remaining acute poisoning cases were organic phosphate poisonings. In a study by Yilmaz et al, the rate of organic phosphate intoxications in all acute poisonings was 8 % (3). In a study conducted by Ozkose et al (4) the same rate was 0.9 %. This high incidence of organic phosphate intoxications is attributed to the fact that the main mean of subsistence in the region is agriculture. Due to the socioeconomic problems and harsh living conditions experienced by agricultural workers, suicide attempts are common, and pesticides, the most easily available substance in this field, are often used in these attempts. In the Cukurova region, using pesticides in suicide attempts has be-

Tab. 4. Multivariate analysis of the factors affecting the hazardous outcomes due to poisoning.

	Unconscious Clinical Status (n=4569)	Prolong Hospital Stay [†] (n=4204)	Mortality [‡] (n=4506)
	OR (95.0% C.I.) p*	OR (95.0% C.I.) p*	OR (95.0% C.I.) p*
Male	1.09(0.92-1.29) 0.320	1.08(0.92-1.28) 0.339	1.67(1.07-2.59) 0.023
Age groups			
14-19	0.195	0.794	0.000
20-24	0.85(0.69-1.05) 0.128	0.96(0.79-1.17) 0.704	1.09(0.59-2.00) 0.788
25-29	1.11(0.87-1.41) 0.401	1.05(0.82-1.34) 0.698	0.69(0.31-1.53) 0.363
30+	1.00(0.82-1.24) 0.973	1.07(0.87-1.30) 0.536	2.73(1.60-4.64) 0.000
Years			
1997-1998	0.001	0.001	0.001
1999-2000	1.11(0.86-1.42) 0.426	0.76(0.60-0.95) 0.016	0.27(0.14-0.53) 0.001
2001-2002	0.76(0.59-0.97) 0.030	0.82(0.66-1.02) 0.071	0.50(0.29-0.87) 0.015
2003-2004	0.65(0.51-0.83) 0.001	0.21(0.16-0.27) 0.001	0.29(0.16-0.53) 0.001
2005-2006	0.33(0.26-0.43) 0.001	0.11(0.08-0.14) 0.001	0.12(0.06-0.24) 0.001
Seasons			
Winter	0.861	0.458	0.055
Spring	0.98(0.78-1.24) 0.887	1.19(0.95-1.49) 0.140	0.51(0.28-0.90) 0.021
Summer	1.03(0.82-1.29) 0.804	1.07(0.85-1.34) 0.562	0.50(0.28-0.89) 0.018
Autumn	1.08(0.85-1.38) 0.524	1.04(0.82-1.33) 0.723	0.69(0.39-1.22) 0.201
Transferred directly	3.00(2.32-3.88) 0.001	1.34(1.09-1.66) 0.006	1.36(0.72-2.56) 0.349
No intervention before admission	1.18(1.00-1.40) 0.055	1.03(0.87-1.22) 0.721	1.96(1.20-3.18) 0.007
Late arrival (>2 hours)	1.46(1.17-1.81) 0.001	1.22(1.00-1.49) 0.050	0.96(0.54-1.73) 0.902
Suicidal	3.38(2.47-4.62) 0.001	1.37(1.06-1.78) 0.018	2.89(1.44-5.78) 0.003
Toxins			
Drugs (overall)	0.001	0.001	0.001
Organophosphates	1.52(1.24-1.87) 0.001	5.67(4.59-7.01) 0.001	4.55(2.71-7.63) 0.001
Carbon monoxide	3.25(1.74-6.10) 0.001	1.16(0.59-2.29) 0.675	24.55(8.42-71.57) 0.001
Mushroom	0.93(0.35-2.47) 0.886	3.19(1.68-6.06) 0.001	13.39(3.06-58.73) 0.001
Corrosives	0.25(0.09-0.70) 0.008	2.84(1.81-4.47) 0.001	9.22(2.74-31.02) 0.001
Methanol	5.44(3.24-9.13) 0.001	1.47(0.85-2.51) 0.166	17.67(6.61-47.27) 0.001
Unknown	1.68(1.28-2.19) 0.001	1.29(0.95-1.74) 0.103	2.13(0.95-4.79) 0.068
Unconscious clinical status	-	2.08(1.73-2.50) 0.001	10.86(6.86-17.19) 0.001

* OR; Odds Ratio, CI; Confidence Interval and p value of risk factors for unconscious clinical status, prolong hospital stay and mortality calculated by 3 multivariate logistic regression models.

come an almost traditional method. Therefore, the incidence of organic phosphate intoxications in the region is higher than in other regions. Other reasons of acute intoxications are ingestion of corrosive substances (3.4 %), poisonous mushrooms (1.7 %), CO intoxications (2.1 %), unknown reasons (8.1 %). With its very temperate climate, our region has a much lower incidence of carbon monoxide intoxications than many other regions of Turkey with severe winters.

The acute poisoning cases due to drug intake accounted for 58.4 % of all cases. In our study, the drugs that were most commonly used in suicide attempts are psychoactive drugs (36.5 %). The same rate was found to be 34 % in a study by Yilmaz et al (3). Suicide attempts using psychoactive drugs are also on the rise in other parts of the world. Pach et al (21, 22) demonstrated that psychoactive drugs are used in 25 % of all acute poisonings. In recent years, due to the serious increase in their improvement and diversity and their most widespread use for depression, the illness of our age, psychoactive drugs have been much more increasingly used in suicide attempts. Furthermore, these types of

drugs are most often preferred in suicide attempts since the patients treated with them can easily obtain them; these patients start treatment with several drugs without psychotherapy; and they are susceptible to suicide attempts.

92 % of the patients who were admitted to the emergency clinic with acute poisoning were hospitalized. After the initial intervention, 6.6 % of them were monitored for 6–12 hours in the emergency clinic and were then discharged. 1.4 % of the patients were taken to the intensive care unit. 96 % of the hospitalized patients were discharged from the hospital. The mortality rate in the present study was 2.6 %, while in other studies carried out in Turkey mortality rates range between 0.8 % and 2.8 % (2, 23, 24). The data obtained from the studies conducted in other countries of the world demonstrate that mortality rates are 2.9 % in Greece (25), 1.4 % in Hong Kong (26), 1.6 % and 0.08 % in Spain (27, 28), 0.5 % in New Zealand (29), and 6.9 % in Hungary (30). The mortality rate in our study is as high as 2.6 % since the incidence of organic phosphate intoxication is high in our region and our hospital is a third step university hos-

pital, the last step of the transfer chain, to which severe cases are transferred. Pesticide-related intoxications commonly occur in many rural areas of the world, as well as in our region. 60 % of all intoxication cases are pesticide-related in Sri Lanka, where the mortality rate is 10 % (31). In India, hundreds of young people die due to pesticide intoxications every year and the mortality rate is 22.6 % (32). In Taiwan, Tsai et al found the hospital mortality of organophosphate intoxications to be 8 % (33). In our hospital, 118 (2.6 %) patients died due to this type of intoxications in the last decade, 45 of them (1 %) had cardiopulmonary arrest when they arrived at the emergency clinic.

The mean number of days spent in the hospital is 2.3 ± 1.7 days. Old age, male gender, and impaired consciousness in patients, their transference without any medical intervention, a period of 2 hours or longer spent before hospital arrival and higher number of days spent in hospital considerably increase mortality. In-hospital duration of stay and mortality rates are higher in males than in females since suicide attempts by male patients are usually serious attempts and result in higher success rates. Due to their more severe clinical pictures, the number of days the male patients spend in hospitals is higher (18).

The hospital stay was found to be longer for patients with old age. In a study conducted by Karbakhsh et al, old patients with acute intoxication have a mortality rate of 11.7 %. In the present study, 70.9 % of the patients with acute intoxication are male. Old-age suicide attempts are more serious attempts; therefore, their mortality rates and the length of hospital stay is higher than those of other patients due to associated comorbid conditions (34).

In patients admitted to emergency clinics with acute intoxication, impaired consciousness increases mortality. Since the intoxication picture is more severe in such patients, their hospital stay is longer. In patients with delayed hospital arrival over 2 hours and in those who do not receive any intervention before hospital arrival, hospital mortality is higher and hospital stay is longer. In particular, in intoxications that require early antidote treatment as in organic phosphate intoxications, delay in hospital arrival seriously increases mortality.

Consequently, deliberate or indeliberate acute intoxications still remain a serious medical and social problem. In Turkey, a developing country, suicide among the younger population due to socioeconomic problems constitutes a critical health problem. The increasing use of psychoactive drugs in suicide attempts suggests that these drugs should be more carefully prescribed in patients with suicidal risk. Old age, male gender, and impaired consciousness in patients, their transference without any medical intervention, a period of 2 hours or longer spent before hospital arrival and higher number of days spent in hospital considerably increase mortality. The frequency of organic phosphate intoxications in our region is a serious risk factor that increases mortality. Securing control of the sales of pesticides used in agriculture and informing local people about the issue is crucial to prevent such intoxications. Despite all the efforts, studies demonstrate that as in the past, acute intoxications will continue to be a serious health problem all around the world in the future.

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