

# A retrospective analysis of acute poisoning during pregnancy

## *Gebelikteki akut zehirlenmelerin geriye dönük incelenmesi*

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### Abstract

**Objective:** The aim of this study is to investigate and analyse pregnant women who were admitted to our emergency service due to acute poisoning.

**Material and Methods:** All cases were retrospectively collected from our computer records and emergency record book between 01.01.2006 and 01.01.2010; the registration data on age, gravidity, gestational week, whether the poisoning was deliberate or accidental, causative agent, admission time, treatment results and mortality outcome were collected and analyzed.

**Results:** Eighty eight women admitted with acute poisoning were known to be pregnant and the poisoning was accidental in 23% of the cases, while 77% were suicidal intoxications. 74% of patients were in the 21-34 age group. Accidental intoxications were due to carbon monoxide, foods and cleaning products. 75.4% of the suicidal poisonings were caused by medical drugs, with analgesics, multiple drugs and psychiatric drugs being the top culprits and accounted for 53%, 31% and 16% of drug poisonings respectively. In terms of gestational week, 47.4% of suicidal poisonings were within the first trimester and the relationship between suicidal attempt and gestational week was found to be statistically significant ( $p < 0.015$ ). However, the relationship between gravidity and the rate of suicidal attempts was not statistically significant ( $p = 0.214$ ). All patients were followed up and treated in the emergency service and no mortality was observed in the study.

**Conclusion:** Most cases of acute poisonings during pregnancy were suicidal. Pregnant women attempted suicide mostly within the first trimester of gestation. The most common agents used for suicidal attempt were medical drugs.

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**Key words:** Poisoning, pregnancy, emergency service

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### Özet

**Amaç:** Zehirlenme nedeniyle acil servise kabul edilen gebe kadınları araştırmak ve analiz etmektir.

**Gereç ve Yöntemler:** 01.01.2006 ve 01.01.2010 tarihleri arasında acil servise zehirlenme ile başvuran tüm gebe olgular bilgisayar kayıtları ve acil kayıt defteri kullanılarak geriye dönük toplandı; yaş, gravida, gebelik haftası, zehirlenme etkeni, zehirlenmenin özkıym veya kazara oluşu, başvuru süresi, uygulanan tedaviler ve mortalite sonuçları analiz edildi.

**Bulgular:** Acil servise akut zehirlenme ile başvuran 88 gebe olgunun %77'si özkıym amaçlı, %23'ü kazara oluşan zehirlenmeler idi. Olguların %74'ü 21-34 yaş grubundaydı. Kazara olan zehirlenmeler karbon monoksit, besin ve temizlik ürünlerine bağlıydı. Özkıym amaçlı zehirlenmelerin %75.4'ünde etken medikal ilaçlar olup sırasıyla %53 analjezikler, %31 çoklu ilaçlar ve %16 oranında da psikiyatrik ilaçlar saptandı. Gebelik haftasına göre, özkıym amaçlı zehirlenmelerin %47.4'ü 1. trimesterde olup gebelik haftası ile özkıym girişimi arasındaki ilişki istatistiksel olarak anlamlı bulundu ( $p < 0.015$ ). Ancak, gravida ile özkıyma teşebbüs etme arasındaki ilişki istatistiksel olarak anlamlı bulunmadı ( $p = 0.214$ ). Olguların tamamının takip ve tedavisi acil serviste yapıldı, çalışmada ölüm vakasına rastlanmadı.

**Sonuç:** Gebelikteki akut zehirlenme vakalarının çoğu özkıym amaçlıdır. Gebeler özkıyma en fazla gebeliğin ilk üç ayında teşebbüs etmektedir. İntihar amacıyla en sık kullanılan madde ise tıbbi ilaçlardır. (J Turkish-German Gynecol Assoc 2011; 12: 199-203)

**Anahtar kelimeler:** Zehirlenme, gebelik, acil servis

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### Introduction

Acute intoxications constitute a considerable number of admissions to the emergency services of all hospitals. Intoxications may occur intentionally or after accidental intake. Although there are a large number of studies on acute intoxications in the literature, studies performed on preg-

nant women are limited. Many physical, psychological and physiological changes occur during pregnancy. So, timing and planning of a gestation jointly by both spouses is very important. What happens if a woman gets pregnant unplanned or unwillingly? Most probably, it will be a source of stress for the mother and as a result the woman will seek an escape from this situation. Efforts to get rid of an unplanned gestation may

vary from simple curettage to suicidal attempts. Poisonings resulting from suicidal attempts are not common during pregnancy. Suicidal attempts most frequently occur by oral intake of drugs or other substances. The approach to acute poisonings during pregnancy is different because of the physiology of pregnancy and the potential risks to two lives. The mother's life should always be the first concern. Unless the mother is in danger, any intervention that may harm the fetus should be avoided if possible.

In this study we aimed to define the demographic, etiological and clinical characteristics of pregnant women with acute poisoning who were admitted to the Emergency Department of Yüzüncü Yıl University in Van/Turkey.

## Material and Methods

Cases of acute poisoning during pregnancy who were admitted to our emergency service between 01.01.2006 and 01.01.2010 were screened retrospectively by using the registration data from computer records and emergency record book. Cases of food poisoning and stings by animals were not included.

Eighty seven cases were enrolled to the study. Data on age, month of admission, gravidity, gestational week, toxic agent, route of poisoning, whether the poisoning was suicidal or accidental and outcome of treatment were recorded in the specifically designed forms. In addition, data about gestation obtained from the obstetrics and gynecology consultation note that was routinely asked every pregnant were filled in the forms. Data extraction and analyses were all done by two researchers of the study.

### Statistical analysis

Descriptive statistics were expressed as means and standard deviations for continuous data and count and percent for categorical data. Chi square test was used to determine the association between categorical variables and Z test was used to compare proportions. In addition, Pearson correlation analysis was used to determine the linear relationships among the continuous variables. The SPSS (ver. 13) statistical program was used for all statistical computations and 5% level was considered as statistically significant.

## Results

A total of 142,456 patients were admitted to the emergency service of Yüzüncü Yıl University between 01.01.2006-01.01.2010. Of these, 1623 (11/1000) cases were diagnosed as acute intoxication and 1163 (71%) were females. Eighty eight (7.5%) female patients were pregnant. While 1 of these 88 patients did not accept any intervention, 13 of them accepted only emergency intervention but refused any obstetrical and gynecological examination.

Sixty seven (77%) of the 87 cases of acute intoxication were suicidal poisonings. Intoxication in the remaining 20 (23%) was due to accidental intake.

The mean age of the cases was  $25.25 \pm 5.85$  years, and age range was 17-45 years. Average age was  $24.78 \pm 5.38$  years in the suicidal intoxication group and  $26.35 \pm 6.80$  in accidental ones (Table 1). Concerning the age, cases were divided into three groups as  $\leq 20$  (group 1), 21-34 (group 2) and  $\geq 35$  years (group 3). There were 16 (18%), 64 (74%) and 7 (8%) patients in the first, second and third groups, respectively. In terms of age groups, no significant difference was found between intentionally and accidentally poisoned pregnant (p=0.795) (Figure 1). When cases were analysed in terms of the causative agents, carbon monoxide (CO) intoxication, food poisonings (mushroom+fish, mushroom..etc) and cleaning products inhalation (bleach, thinner, hydrochloric acid) were determined in 7, 6 and 7 cases of accidental poisonings (n=20) respectively. No causative agents could be determined in 10 cases of suicidal poisonings (n=67). Forty three (75.4%) of the remaining cases attempted suicide by taking medical drugs. Bleach and rat poison were determined in the second and third order, respectively. The drugs taken in suicidal poisonings were analgesic drugs in 53% of cases, multiple drugs in 31% and psychiatric drugs in 16% (Table 2).

When cases were analysed in terms of gestational weeks, 27 (47.4%) of 57 suicidal cases were in the first trimester, 17 (29.8%) were in the second and 13 (22.8%) were in the third trimester. The relationship between gestational week and suicide attempt was found to be statistically significant (p<0.015) (Figure 2).

Concerning the month of admission, the highest record was in May with the rate of 14.8 %. When suicidal intoxications were separately analysed, it was found that the most frequent appli-

Table 1. Age distribution of study groups

	Minimum (years)	Maximum (years)	Average (years)
Accidental intoxication	18	45	$26.35 \pm 6.80$
Suicidal intoxication	17	42	$24.78 \pm 5.38$
Total	17	45	$25.25 \pm 5.85$

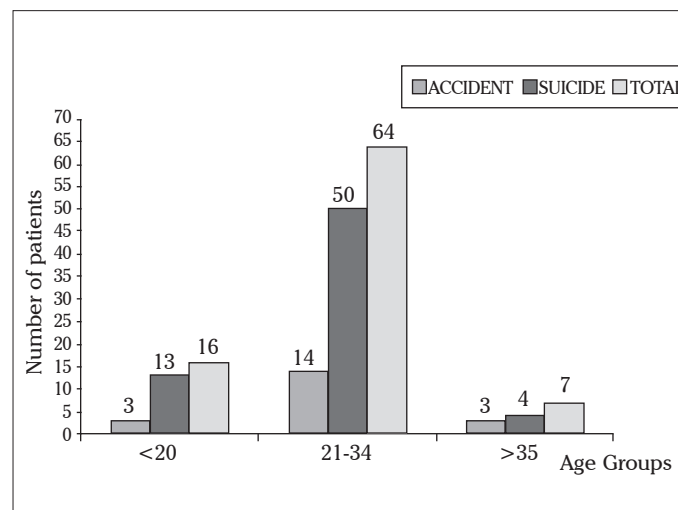
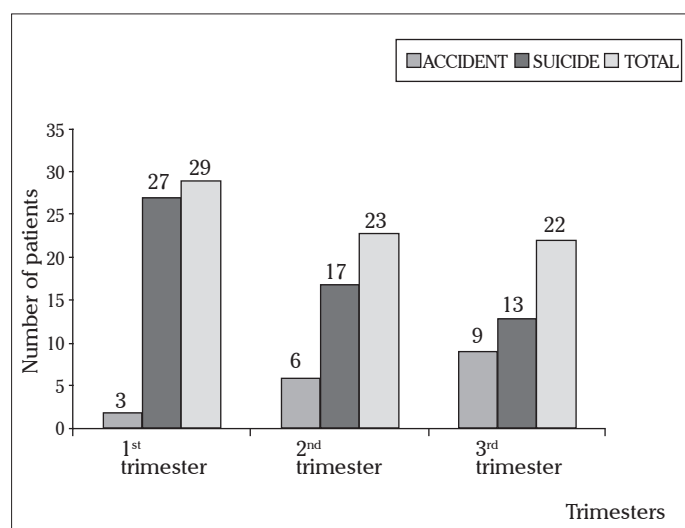


Figure 1. Dispersion of cases according to age groups

**Table 2. Dispersion of poisonings according to causative agent**

Causative Agent	Number (n)	Ratio (%)
Food	6	6.9
Carbon monoxide (CO)	7	8.1
Cleansing substance inhalation	7	8.1
Drugs	43	49.4
Analgesics (53%)		
Multiple drugs (31%)		
Psychiatric drugs (16%)		
Corrosive substance intake	6	6.9
Ratsbane	8	9.1
Others	10	11.5
Total	87	100

**Figure 2. Dispersion of patients according to gestational week****Table 3. Distribution of cases according to gravidity**

Gravidity	≤3	>3	Total
	n (%)	n (%)	n (%)
Accidental intoxication	18 (20.7)	2 (2.3)	20 (23.0)
Suicidal intoxication	49 (56.3)	18 (20.7)	67 (77.0)
Total	67 (77.1)	20 (22.9)	87 (100.0)

cation was observed in August with the rate of 12.3%. There was no statistically significant relationship between the rate of suicide attempts and month of admission ( $p>0.05$ ).

Concerning the gravidity (G), cases were grouped as  $G\leq 3$  (group 1) and  $G>3$  (group 2). Rates of groups were found as 77% ( $n=67$ ) and 23% ( $n=20$ ) in the first and second groups, respectively. When the suicidal poisonings were reviewed separately, rates were determined as 73.1% and 26.9% in the first and second groups, respectively. The relationship between

gravidity and the rate of suicidal attempt was not found to be statistically significant ( $p=0.214$ ).

All of the patients were followed up and treated in the emergency service and were discharged from there. In this study, no case of mortality was observed.

## Discussion

To our knowledge, this is the first study from Turkey that analyzes acute poisoning cases which occurred during pregnancy. Poisonings may vary according to country, region, traditions and degree of development. The American Association of Poison Control Centers reported 2,380,000 cases of poisoning in 2002 and a 4.9% increase was observed in poisonings comparing to that in 2001 (1). The incidence was found as 5.4% in a study from Iran (2). Rates of 1.8/1000 and 6.9/1000 were reported by Hassens et al. (3) and Bajo Bajo et al. (4) respectively. According to the results of quite a few epidemiologic studies conducted in our country, the annual poisoning incidence was determined as 0.8-5% (5-8). So the rate of 1.1% that we found in this study performed at a university hospital in the province of Van, located in the most eastern part of Turkey, is in accordance with the literature findings. We think that the difference among the rates reported might be due to the difference among the developmental status, economical and sociocultural levels of the countries.

According to studies conducted in different parts of Turkey (6, 9, 10), it was reported that the majority of acute poisoning cases were women. In our study, too, the ratio of women was 71% and this was 2.5 times higher than men. Pregnant cases constituted 7.5% of all women admitted with acute intoxication. Suicidal poisonings are reported in the literature to be more than accidental ones (11). In a study on acute poisonings from our country, it was reported that 48.2% were accidental, 51.8% were suicidal (5), however in another study, 76.7% were accidental and 23.4% were suicidal (12). Ahmadi et al. reported in their study conducted in Iran that 85% of poisonings were suicidal (13). According to the study conducted by K. Candace et al. on women of reproductive age and during pregnancy with acute poisoning; 69.6% of cases occurred after suicidal intake and 21.5% were accidental (14). In our study, 77% of pregnant cases were suicidal and 23% were accidental. This result can be due to conditions in our region such as life style and suppression of the society on women, women's lower authority in the family and society, their lack of economic independence and lack of knowledge about family planning. Further studies are needed to determine the effects of all those factors.

Watson et al. reported that 32% of poisonings occurred in the first trimester, 37.6% in the second trimester and 30.5% in the third trimester (15). The rates of acute poisonings in our study were 39.2%, 31.1% and 29.7% in the first, second and third trimesters, respectively. If suicidal poisoning was taken out for analysis, the rates were 49%, 24.5% and 26.5% in the first, second and third trimesters respectively. It can be appreciated that the rate of suicidal attempts was significantly reduced with advanc-

ing gestational age. This observation was supported by the study by Czeiel et al. conducted in Budapest in 1985-1993 (16). This decrease may be attributed to the increasing perception of the gestation by the women as their gestation advances.

In our study, the most common causative agents were found to be drugs, bleach and rat poison. Similar to other reported case series (17-19), poisonings with medical drugs were the most frequent and the rate was 75.4%. Acute poisonings during pregnancy constituted a small part of maternal demise in antenatal and postnatal periods. The most common method of suicidal attempt is oral intake of drugs or other toxic substances. Overuse of analgesics, vitamins, iron tablets, antibiotics and psychotropic drugs makes up 50-79% of those attempts (20, 21). It was reported that 50% of adult poisonings were with 2-3 agents by Mc Mahon et al. (22).

Fifty three percent of poisonings with drugs were with analgesics, 31% with multiple drugs (vitamin, antihistamines, antibiotics, digestive system drug, antitussive) and 16% with psychiatric drugs (tricyclic antidepressants, SSRIs). Similarly, poisonings occurred most commonly with analgesics according to the results of the study by K. Candace et al. (14). Analgesics are the most common agents leading to poisonings in our country because they can be easily bought over the counter.

All acute intoxication cases in our study were followed up and treated in the emergency service from where they were discharged. While death has been reported from some centers in our country (19, 23-25), no death occurred in our study. Mortality rates among cases admitted with acute poisoning were found as 0.03% in Serinken et al.'s (19) study and 2.8% in the study performed in Gaziantep by Göksu et al. (24). We postulate that aero mortality observed in our study is due to intake of drugs with low toxicity and to rapid application of an effective treatment protocol to potentially lethal poisonings. It is notable in our study that the majority of pregnant women who attempted suicide were in the first trimester and suicidal attempts decreased as gestational weeks increased. It is postulated that women with unplanned pregnancy commit suicide as a way to seek attention and to get rid of the pregnancy; which is known as a secondary gain. To reduce unplanned pregnancies, spouses in Van region should be better informed about family planning methods. Moreover, these patients should be evaluated psychiatrically before being discharged. We believe that such cases will decrease with increasing educational level, improving socioeconomical status and especially with increasing family planning services.

Pregnancy is a special period during which physical, psychological and physiological changes will occur in women. Untimely and unplanned pregnancy can be a source of additional stress for women. This is the first study from our country that analyses the epidemiology of acute intoxications during pregnancy. Nevertheless, our study is limited by being retrospective and including cases from only one center. In order to obtain more generalizable results; prospective, multicentered studies, including follow up of fetal outcomes as well, should be performed.

### Conflict of interest

No conflict of interest was declared by the authors.

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