

DEMOGRAPHIC EVALUATION OF ATTEMPTED SUICIDE BY DRUG OVERDOSE IN ISTANBUL

CUMALI KARATOPRAK¹, LAIKA KARABULUT², BILGIVAR KAYA³, MAHMUT ALTINDAL², BILAL UGURLUKIS², MEHMET HANIFI KILICASLAN², GUL BABACAN ABANONU³, GUVEN CETIN⁴, MEHMET ALI CIKRIKCIOGLU⁵

¹Internal Medicine Clinic, Bezmialem Vakif University, Faculty of Medicine, 34093 Fatih, Istanbul - ²Internal Medicine Clinic, Okmeydanı Training and Resarch Hospital, 34093 Okmeydani-Sisli, Istanbul - ³Internal Medicine Clinic, Haydarpasa Numune Treatment and resarch Hospital, 34120 Üsküdar-Istanbul - ⁴Hematology Department, Internal Medicine Clinic, Bezmialem Vakif University, Faculty of Medicine, 34093 Fatih, Istanbul - ⁵Internal Medicine Clinic, Bezmialem Vakif University, Faculty of Medicine, 34093 Fatih, Istanbul, Turkey

ABSTRACT

Introduction: In recent years in our country, as well as all over the world, the frequency of attempted suicide by drug overdose is very noticeable. In our study, we aimed to identify general characteristics of patients with drug-attempted suicide, their drug preferences, and the ways in which they obtained the drugs. We conducted an observational study of patients who came to the emergency department with an indication of drug use for attempted suicide during the one-year.

Methods: This research is an observational prospective study. Patients were questioned about their demographic information, the type and amount of drug taken, the acquisition time, their means of obtaining the supply, the number of previous attempts, their psychological treatment, symptoms, and morbidity; mortality rate was envisaged.

Results: A total of 228 patients completed the study. Of these patients, 183 (80.3%) were female and 45 (19.7%) were male. Their occupations were most commonly employees (36%), followed by housewives (27.6%), students (20.2%), single young women who chose not to work (11.8%) and the unemployed (3.9%). When education level was evaluated, most commonly, patients had a primary level of education, followed by those who had not gone to high school (37.3%), who had attended or graduated university (7%), and who had not gone to school at all (3.1%). The most common drugs used for suicide attempts were psychotropic drugs (41.2%) and analgesics (24.1%). In addition, 10% of patients had obtained drugs from pharmacy or grocery without a prescription.

Conclusion: Suicide-aimed drug use was frequently seen among employees, singles, women and those who had a primary level of education. Psychotropic drugs and analgesics were the most commonly used to commit suicide. Using medical drugs especially psychotropic and analgesics at high rates in drug intoxication suggest that such drugs should be prescribed for more attention. When early diagnosis and treatment were made in patients attempting suicide, we think that the rates of serious complication may be quite low.

Key words: Drug poisoning, Istanbul, suicide, demographic characteristics.

Received November 30, 2014; Accepted May 02, 2015

Introduction

Suicide is a major public health problem and its prevalence is increasing worldwide⁽¹⁾. Each year in the United States (U.S.), there are approximately 2 million attempted suicides. In a study conducted in the U.S., suicide was the third leading cause of death among children and young adults between the ages of 10 to 24, after traffic accidents and murder^(2,3). Another study conducted in the United States reported that suicide cases among the 35-64

year old age group exceeded the occurrence of motor vehicle accidents⁽⁴⁾. Studies conducted in Turkey have found the annual incidence of suicide attempts to be 0.8-5%⁽⁵⁻⁸⁾. In the U.S., drug poisoning is the second most common method of suicide, after firearm injury⁽⁴⁾. In a study conducted in Iran, the most common method of suicide is drug intake, whether intentionally or accidentally⁽⁹⁾. In our country, as well as all over the world, the frequency of attempted suicide by drug overdose is very noticeable^(5,6).

Many variables, such as the age and gender of individuals who commit or attempt suicide, may vary from society to society and from region to region. In Istanbul, emergency clinics of both public and private hospitals often see patients with suicide attempts via drug overdose. In our review of the literature, we did not find a large-scale study that looked at patients in Istanbul who attempted suicide by drug intake. In our study, we looked at the demographic characteristics, type of drug used, time to obtain the drug, and history of psychological treatment in patients in Istanbul who attempted suicide via drugs. Information about the patients' current conditions was collected one month after the attempt. Thus, we aimed to identify the overall trends, drug preferences, and means of obtaining the drugs in patients who attempted suicide using medications in our city.

Material and Methods

This research is observational prospective study. The study population included 228 patients over the age of 14 admitted to emergency department (ED) with suicide-aimed drug ingestion during the one-year period. Those who attempted suicide by other means, such as firearms, hanging, or jumping, were excluded from the study. Additionally, individuals who accidentally took a high dose of a drug, as well as those who drank liquids such as bleach or hydrochloric acid, were excluded.

Demographic information, the type and amount of drug taken, the time of intake, the means of obtaining the drug supply, the number of previous attempts, previous psychological treatment, symptoms and morbidity as well as mortality rate were collected. One month later, patients were contacted by telephone and were asked about whether they had any physical or mental disorders and whether or not they were being seen by a psychiatrist for follow-up. All data was recorded in data collection form.

When creating the study protocol with the aim of statistical convenience, those who attempted suicide were divided into groups according to their occupation as employees (all occupational groups including workers and civil servants), housewives (those who are married and do not want to work), girls at home (who are single and do not want to work), unemployed (looking for work), students, and retired.

Each drug that was taken with suicidal intent was recorded and grouped for ease of analysis. All

antidepressant and antipsychotic drugs, as well as other similar drugs, were grouped as psychotropic drugs. Acetylsalicylic acid, paracetamol, and non-steroidal anti-inflammatory drugs were placed in the analgesic group. All antibiotics were grouped together. Patients who took more than one type of drug from different drug groups were placed in the mixed drugs group. Rare drugs which we could not group were separately recorded.

While recording patients' level of education, patients were divided into 4 groups for study convenience. The first group of patients consisted of those who did not go to school. The second group consisted of those who had completed, dropped out of or continued the first 8 years of education (primary education). The third group consisted of those who had completed, dropped out of or continued high school education. The last group consisted of those who had graduated, dropped out of or continued to study at university (2 year vocational schools were included). The study was started after approval by the local ethics committee.

Statistical analysis

For statistical analysis of obtained results, Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA) for Windows version 12.0 software was used. For evaluation of the data mean and standard deviation, descriptive statistics were used.

Results

The study was completed by 183 (80.3%) female and 45 (19.7%) male for a total of 228 patients. The youngest and the oldest of the patients were 14 and 75 years old respectively, and the mean age was 24.8 ± 9 years. The mean age of males was 24.3 ± 6.6 years while, the mean age of females was 24.9 ± 9 years. The most common ages for patients attempting suicide were 18 and 24.

When the civil status of patients was studied, 138 (60.5%) patients were single, 83 (36.4%) were married, and 7 (3.1%) were divorced. Patients were classified into 6 groups according to their occupation as retired, employee, unemployed, housewife, student, or girls staying at home. As a result of this evaluation, the statistics for occupation among the study patients was found to be employees ($n=82$ (36%)), housewives ($n=63$ (27.6%)), students ($n=46$ (20.2%)), girls staying at home ($n=27$ (11.8%)), unemployed ($n=9$ (3.9%)) and retired

(n=1 (0.4%)). According to occupation and gender, housewives and employees were found to have the most frequent suicide attempts among women and men, respectively.

When the level of education was studied, patients with primary education level were found to be most common (n=120 (52.6%)), followed by patients with high school education (n=85 (37.3%)), university education (n=16 (7%)), and with no educational level at all (n=7 (3.1%)). Among males, primary school was the most common educational level, while among females, high school was the most common and primary school was the least common (figure 1).

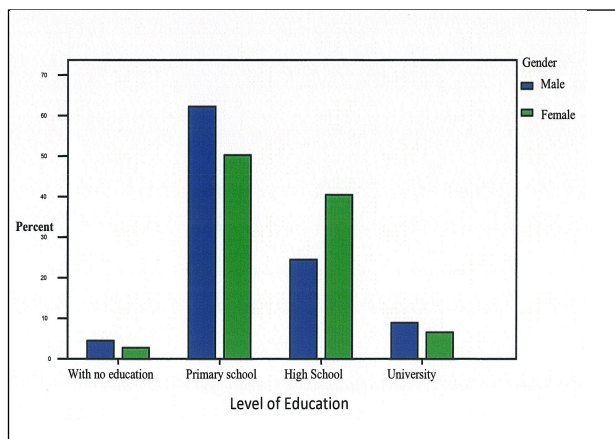


Figure 1: Educational levels in females and males attempting suicide by drug overdose.

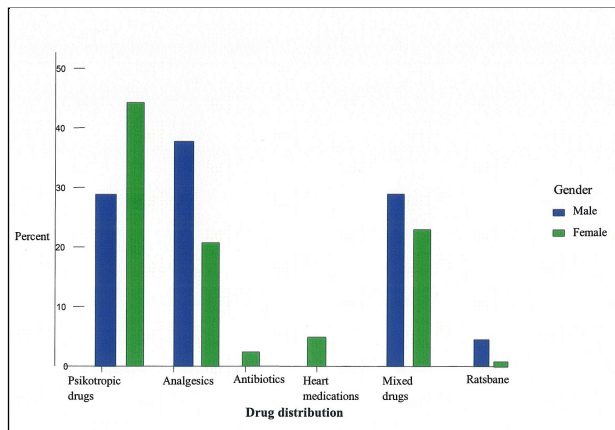


Figure 2: The drugs preferred by people attempting suicide by drug overdose (All antidepressant and antipsychotic drugs, as well as other similar drugs, were grouped as psychotropic drugs. Acetylsalicylic acid, paracetamol, and nonsteroidal anti-inflammatory drugs were placed in the analgesic group.)

When we analyzed the drugs used by the 228 patients in their suicide attempts, numerous drug types appeared. When we classified drugs accord-

ing to their contents for analysis, psychotropic drugs (n=94 (41.2%)) were found to be the most commonly used, followed by analgesics (n=55 (24.1%)) and mixed drugs (n=55 (24.1%)). Among females, psychotropic drugs were most common, while among males, analgesics were most common (figure 2).

When the way of obtaining the supply of drugs used was investigated, 202 (88.6%) patients' or families' homes already had the drugs that were used; 21 (9.2%) patients had obtained drugs from a drugstore or grocery store without prescription, and 5 (2.2%) patients obtained drugs from their friends. It was found that evening and night were the most preferred time of day for suicide-aimed drug intake; it was observed that patients presented at or were brought to the emergency department one hour after drug intake (figure 3, 4).

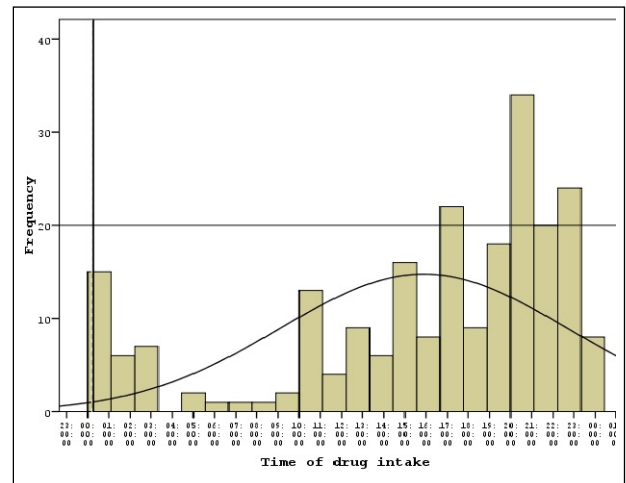


Figure 3: Hours preferred to take medication by people attempting suicide by drug overdose.

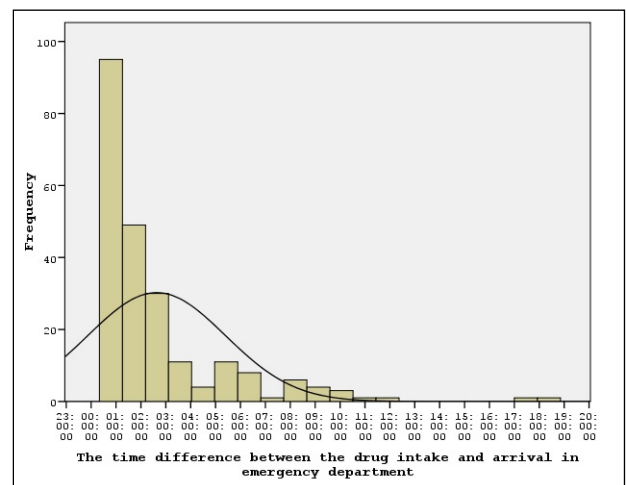


Figure 4: The time difference between the drug intake and arrival in emergency department.

In the ED, during the first interview 205 (89.9%) patients were awake and 23 (10.1%) patients were not. Of the communicative patients, 164 (71.9%) had no complaints and 41 (18%) patients had several complaints including nausea, vomiting, tremors, and/or palpitations. When the patients were evaluated for past similar suicide attempts, it was found that 192 (84.2%) of them had attempted suicide for the first time, 23 (10.1%) for the second time, 10 (4.4%) for the third time and 3 (1.3%) for the fourth time. When the patients were questioned about presence of previous psychiatric treatments, 29.75% of first attempt patients, 60.9% of second attempt patients, 40% of third attempt patients and 100% of fourth attempt patients had undergone psychiatric treatment in the past.

While 219 (95.2%) patients admitted to the ED had no need for intensive care, 9 (4.8%) patients were placed in intensive care; one of the patients in the intensive care unit was shocked and died because of the hypotensive effect of the ingested calcium channel blockers. It was seen that patients hospitalized in intensive care had commonly taken tricyclic antidepressants (amitriptyline) and other psychotropic drugs.

After treatment of internal diseases, however all patients were referred for psychiatric assessment, 168 (74%) were reached by telephone one month after treatment, whereas other 59 (26%) were could not be contacted because of incorrect phone number. Out of the reached patients, none of them had additional complaints after discharge, and 123 (54%) did not go for psychiatric treatment after discharge.

Discussion

Today, thousands of natural and synthetic substances, when taken at high doses in order to commit suicide, cause toxicity. While many poisoned people are saved by convenient and fast treatment, in some of people drug overdose leads to morbidity and mortality⁽¹⁰⁾. In intoxication cases, the patient's psychological condition, drug type and quantity ingested, time since ingestion, the way of supply, number of attempts and complaints are very important because this information provides important clues during the treatment and follow-up.

During our one year study, we have investigated 228 drug intoxication cases that referred to the ED. The ratio of females to males was found to be

4:1. In the literature, female to male ratio is increased in favor of women, and our study was found to be consistent with the literatures^(7,8). In a study conducted in the U.S., drug intoxication as a suicide method is the third most common method among males and the most common among females⁽¹¹⁻¹³⁾. However, during analysis of mortality rates due to suicide attempts, the reverse becomes true, as the mortality rate among males increases^(3,9).

In our study, the average age was found to be 25 years, and there was not a significant age difference between males and females. In previously conducted studies, there are both compatible (3, 8) and a slightly higher average age than our average age^(4, 13, 14). This situation may be due to our country's youth population being high and due to the start of social problems in females at early ages.

In our study it was seen that employees, housewives, and students are the occupations held by most of those who attempted suicide by using drugs. It may be assumed that this situation is a result of the conditions and the economic difficulties for employees, the economic dependence on and problems with their husbands for housewives, and greater sensitivity to stress for students. According to the level of education, the vast majority of those who attempted suicide are primary school graduates or those who had drop out of it. In the literature, there are studies that show that those who have a primary school educational level attempt suicide more frequently⁽¹⁴⁾. While evaluating the drugs used, it was found that psychotropic drugs were the most taken drugs. In our study, it was observed that females had frequently taken psychotropic drugs and males analgesic drugs. In a study conducted in Iran in 2010, it was seen that among suicide attempts using drugs, psychotropic drugs were the most common, followed by analgesics⁽³⁾. In a study of 1188 patients, Kiyotaka and his colleagues found that benzodiazepines, neuroleptics, antidepressants, and analgesics are used most⁽¹²⁾. Whether intoxication cases are admitted to the ED or the intensive care unit, psychotropic drugs are the most common and our study supports that observation⁽¹⁵⁾. In a few studies conducted in our country, analgesics are the most commonly used^(7,8).

Only 5% of patients in our study did need intensive care and one patient, despite all efforts, died. Despite the fact that the vast majority of patients stated that they had taken toxic doses of drugs, as a result of quick and convenient treat-

ment, no complication occurred. Because there is no objective criterion to determine the amount of patients' ingested drugs, it is possible that patients gave exaggerated numbers. Also as result of our study, it was found that patients choose evenings and nights to commit suicide. These times may be chosen because some of the patients who attempted suicide wanted to attract attention rather than to die.

It was found that, during the examination of patients one month after their attempts that no one had any complaints related to the ingested drugs after discharge and there was no need for admittance to the hospital. 54% of patients who were directed to psychiatry after the intoxication treatment in ED and in clinics, did not agree to go to psychiatry because of different reasons.

These results show us that, as soon as the intoxication treatment of suicide-attempt patients admitted to ED is finished and before discharge, patients should be recommended for mental health assessment⁽²⁾.

Limitations: in the study, the assessment of the mental health state of the patients attempting suicide with drugs was required. However, because of the lack of a psychiatric service in our hospital, the mental health of patients was not evaluated. Risk factors, other than demographic characteristics, of attempted suicide patients that were not evaluated are a weak aspect of our study. Due to the fact that our hospital mostly serves people with low and middle income, the entire population of Istanbul may not be represented.

Conclusions

in Istanbul, the tendency of suicide attempts utilizing drugs was found to be in the range of 18-28 years, at most. Suicide-aimed drug use was frequently seen among employees, singles, women and those who had a primary level of education. Psychotropic drugs and analgesics were the most commonly used to commit suicide. It was observed that drugs found at home were used to commit suicide. In addition, it was found that 10% of the drugs patients obtained were received in a drug-store or grocery store without a prescription.

References

- 1) Nordentoft M. *Prevention of suicide and attempted suicide in Denmark. Epidemiological studies of suicide and intervention studies in selected risk groups.* Dan Med Bull 2007; 54: 306-69.
- 2) Kennedy SP, Baraff LJ, Suddath RL, Asarnow JR. *Emergency department management of suicidal adolescents.* Ann Emerg Med 2004; 43: 452-60.
- 3) Ahmadi A, Pakravan N, Ghazizadeh Z. *Pattern of acute food, drug, and chemical poisoning in Sari City, Northern Iran.* Hum Exp Toxicol 2010; 29: 731-38.
- 4) *Centers for Disease Control and Prevention (CDC). Suicide among adults aged 35-64 years - United States, 1999-2010.* MMWR Morb Mortal Wkly Rep 2013; 62: 321-25.
- 5) Pinar A, Fowler J, Bond GR. *Acute poisoning in Izmir, Turkey. A pilot epidemiologic study.* J Toxicol Clin Toxicol 1993; 31: 593-601.
- 6) Karakaya A, Vural N. *Acute poisoning admission in one of the hospital in Ankara.* Hum Toxicol 1985; 4: 323-26.
- 7) Ozkose Z, Ayoglu F. *Etiological and demographical characteristics of acute adult poisoning in Ankara, Turkey.* Hum Exp Toxicol 1999; 18: 614-18.
- 8) Goksu S, Yildirim C, Kocoglu H, Tutak A, Oner U. *Characteristics of acute adult poisoning in Gaziantep, Turkey.* J Toxicol Clin Toxicol 2002; 40: 833-37.
- 9) Moghadamnia AA, Abdollahi M. *An epidemiological study of poisoning in northern Islamic Republic of Iran.* East Mediterr Health J 2002; 8: 88-94
- 10) Rendell M, McGrane D, Cuesta M. *Fatal compulsive water drinking.* JAMA 1978; 240: 2557-59.
- 11) Hawton K, van Heeringen K. *Suicide.* Lancet 2009; 373: 1372-81.
- 12) Hirata K; Matsumoto Y; Tomioka J; Kurokawa A; Matsumoto M; et al. *Acute Drug Poisoning at Critical Care Departments in Japan.* Japanese Journal of Hospital Pharmacy 1998; 24: 340-48
- 13) Nock MK, Green JG, Hwang I, McLaughlin KA, Sampson NA, et al. *Prevalence, correlates, and treatment of lifetime suicidal behavior among adolescents: results from the National Comorbidity Survey Replication Adolescent Supplement.* JAMA Psychiatry 2013; 70: 300-10
- 14) Polewka A, Pach J, Zieba A, Chrostek Maj J, Kroch S, et al. *A trial for the complex risk assessment of repeated suicide predictors in patients after suicidal poisoning attempts, hospitalized in the Department of Clinical Toxicology CM UJ in Krakow. I. Influence of socio-demographic factors.* Przegl Lek 2001; 58: 325-29.
- 15) Webb RT, Qin P, Stevens H, Shaw J, Appleby L, et al. *National study of suicide method in violent criminal offenders.* J Affect Disord 2013; 150(2): 237-44.

Corresponding author

DR. CUMALI KARATOPRAK
Internal Medicine Clinic, Bezmialem Vakif University
Faculty of Medicine
34093 Fatih
Istanbul
(Turkey)