

# Acute intoxication in nonhospital emergency clinics

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SUMMA 112. Madrid, Spain.

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**RECEIVED:**

31-1-2008

**ACCEPTED:**

17-5-2008

**CONFLICT OF INTEREST:**

Premio Accésit de Lainco de  
Investigación Toxicológica  
Clínica.

**Objective:** To determine the prevalence of types of acute intoxication attended at nonhospital emergency clinics of the SUMMA 112 network of the autonomous community of Madrid in 2005.

**Methods:** A retrospective descriptive study of all cases of acute intoxication, analyzing age, sex, medical history, poisoning agent responsible, treatment, distribution throughout the year, and patient destination on discharge.

**Results:** A total of 1382 cases of intoxication (54.1% in women, 45.9% in men) were attended. The mean (SD) age was 39.8 (16) years. The poisoning agent was most often alcohol (27.03%), followed by benzodiazepines (17.17%) and cocaine (5.97%). The records showed that 46.9% of the patients had a history of psychiatric illness and 21.16% had a history of alcoholism. Most treatments were symptomatic (34.96%). An antidote was administered in 28.83% cases, gastric lavage was performed in 16.25%, activated carbon doses applied in 11.96%, and oxygen administered in 8.28%.

**Conclusions:** The most frequently attended patient is a man with a history of chronic alcoholism who suffers acute intoxication after excessive intake. Women who take medication overdoses in suicide attempts account for a slightly smaller percentage. In these cases, there is a history of mental illness and recurrent episodes. No noteworthy differences in patient load were observed from month to month. [Emergencias 2008;20:328-331]

**Key words:** Intoxication. Emergency medical services. Epidemiology.

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## Introduction

Most of the studies on intoxications carried out are based on a specific subcategory (medications, alcohol) and have mainly been undertaken at a hospital level. Despite the existence of action protocols of the AETOX since January 2004, these are not routinely used by healthcare personnel making unified management and adequate data collection at a national level difficult. Extrahospital emergencies have increasingly acquired greater relevance without sufficient data in this setting to provide knowledge of the general situation related to acute intoxications (AI). Thus, professional formation strategies, action protocols and the equipping of care units have been established. Diagnosis in extrahospital emergency clinics (EHEC) is based on clinical suspicion derived from anamnesis of the patient or witness, physical signs and indirect data (pills blisters, bottles). The main objective of this study was to establish the prevalence of AI attended by EHEC of SUMMA 112 in the Community of Madrid (CAM) in 2005.

## Methods

The clinical histories of all the cases of AI attended by the EHEC of SUMMA 112 of the CAM from January 1, 2005 to December 31, 2005 were reviewed.

The population of the CAM was estimated to be approximately 6 million inhabitants. In 2005 SUMMA 112 received a total of 1,064,898 calls with a total of 165,764 calls requiring medical attention. Of these, 1,685 (1.02%) were for AI. The diagnostic coding system used was the ICD-10 (Table 1).

The variables analysed in the study were: type of poisoning, age, sex, intentionality (suicide or call for attention and accidental), personal history (psychiatric, toxic habits and previous suicide attempts), treatment (symptomatic, antidote), distribution over time and resolution (death, hospital transfer).

To study the different values of the quantitative variables arithmetic means were used and the degree of dispersion was specified with typical deviation. The absolute number of cases and the percentage of each were used to express the qualitative

**Table 1.** International classification of diseases<sup>10</sup>

Diagnosis	Code
Attempted suicide	E958.9
Attempted suicide by drugs	976.9 and E950.4
Attempted suicide by toxic substances	Not codifiable
Attempted suicide by gas inhalation	987.9 and E952.9
<b>Intoxications:</b>	
Acute alcoholic	305.0 and 303.3
Hallucinogens	969.9 and E980.3
Analgesics	965.9 and E980.0
Amphetamines	969.7 and E980.3
Anticonvulsants	969.3 and E980.4
Antidepressants	969.0 and E980.3
Barbiturates	967.0 and E980.1
Benzodiazepines	969.4 and E980.3
Cocaine	968.6 and E980.4
Heroin	965.01 and E980.0
Methadone	965.02 and E980.0
Opium	965.00 and E980.0
Salicylates	965.1 and E980.0
Unspecified gas, smoke or vapour	987.9 and E982.9
Carbon monoxide	986 and E982.1
Domestic products	E980.9
Agricultural/industrial products	E980.9
Miscellaneous	E980.9
Drug overdose/pharmacologic overdose	977.9 and E980.5

variables. For statistical analyses of the results and the associations between the different variables the SPSS for Windows statistical package was used with contingency tables and the non parametric Chi-square test and the Pearson correlation coefficient.

## Results

During 2005, SUMMA 112 attended 165,764 extrahospital emergencies, 1,685 of which corre-

sponded to AI (1.01% of the emergencies). Clinical histories lacking the study variables were excluded and thus, a total of 1,382 AI were included, with 747 (54.1%) being women and 635 (45.9%) men.

The mean age of the patients included was  $39.8 \pm 16$  years (mode 30). The age groups requiring more care were those from 26-35 years and 36-45 years (25.6 and 25.1%, respectively) with a similar distribution by sexes in both cases (male:female relationship of 1:1).

The most frequent toxic used was alcohol in 373 cases (27%), mostly in males (64.6%) from 36.45 years of age. Medication poisoning was the second most frequent cause in 305 cases (22.13%), mainly with benzodiazepines and antidepressants in women from 26 to 45 years of age with a high percentage of attempted suicides. A total of 171 cases (12.4%) of illegal drug consumption was attended, most with cocaine (5.97%), followed by heroin (4.21%). The prototype of patient intoxicated by cocaine was a male between 26-45 years of age. A detailed description of the causes by sex and age is presented in Table 2.

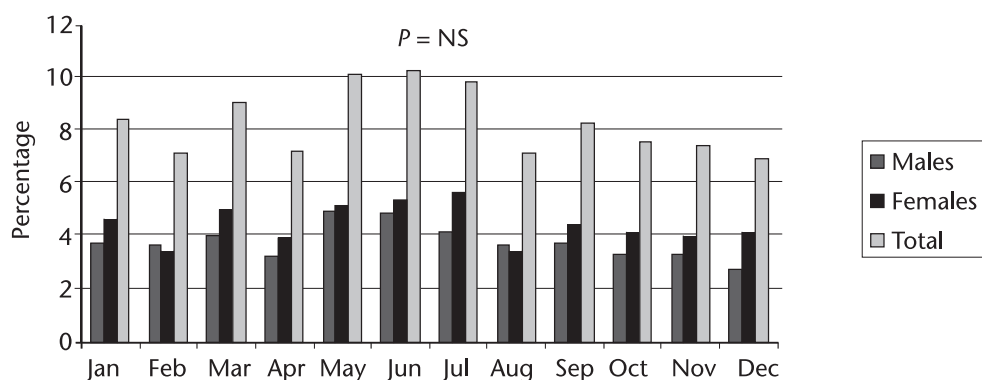
Of the population studied 42.1% of the cases were voluntary poisoning. In the age peak between 26-325 years with 11.1% of the cases, the type of toxic most commonly used was medications (33.6%).

It was observed that 46.9% of the cases presented a history of psychiatric care with 21.2% of alcoholism, 13.4% toxic substance intake (cocaine, heroin) and 19.3% had previously attempted suicide.

**Table 2.** Distribution of toxic substances based on sex and age

	T(%)	Sex		Age (in years)							
		H	M	0-15	16-25	26-35	36-45	46-55	56-65	66-75	76-98
<b>Medication</b>											
Benzodiazepines	17.17%	7.04%	10.13%	0.3	2.5	4	4.9	2.9	1.2	0.7	0.7
Antidepressants	3.62%	1.07%	2.55%	0.1	0.4	1.3	0.8	0.4	0.3	0.2	0.1
Analgesics	0.60%	0.27%	0.34%	0.1	0.2	0.1	0.1	0.1	-	-	-
Barbiturates	0.40%	0.07%	0.34%	-	0.1	0.1	-	0.1	0.1	-	-
Salicylates	0.27%	0.07%	0.20%	0.1	-	0.1	0.1	-	-	-	-
Anticonvulsants	0.07%	0.00%	0.07%	-	-	0.1	-	-	-	-	-
<b>Alcohol</b>	27.03%	17.57%	9.46%	0.6	4.6	5.6	6.5	5.4	2.8	1.2	0.3
<b>Abuse drugs</b>											
Cocaine	5.97%	4.96%	1.01%	-	1.2	2.4	1.3	0.1	-	-	-
Heroin	4.21%	1.21%	3.00%	-	0.2	1	1.6	1	0.4	-	-
Methodone	1.01%	0.67%	0.34%	-	0.1	0.3	0.6	-	-	-	-
Opium	0.67%	0.34%	0.34%	-	0.1	0.1	0.1	-	0.2	0.1	-
Amphetamines	0.27%	0.13%	0.13%	-	0.3	-	-	-	-	-	-
Hallucinogens	0.27%	0.07%	0.20%	-	0.1	0.1	0.1	-	-	-	-
<b>Overdose</b>	3.22%	1.34%	1.88%	-	0.3	1	1	0.3	0.3	0.1	0.4
<b>Gas/smoke inhal.</b>	1.48%	0.67%	0.80%	-	0.2	0.2	0.1	0.7	0.1	-	0.1
<b>CO intoxic.</b>	0.00%	0.00%	0.00%	-	-	-	-	-	-	-	-
<b>Pharm.suicide</b>	33.78%	9.65%	24.13%	1.1	4.5	9.2	8	5.4	3.2	0.9	1.4

T: total; M: males; F: females; -: no cases; inhal: inhalation; intoxic: intoxication; CO: carbon monoxide; pharm.: pharmacological.



**Figure 1.** Distribution over time (months) of acute extrahospital intoxications.

In 34.96% of the patients symptomatic-specific treatment (serotherapy, intravenous, thiamine) was administered, with the most frequently used being antidotes (mainly flumazenil and naloxone) in 28.8%, gastric lavage in 16.23%, activated charcoal in 11.9% and oxygen in 8.3% of the cases.

With regard to the distribution over time, the month of June presented the greatest number of AI (10.3%, 142 cases) followed by May and July with very similar percentages (Figure 1). Alcohol was found to be the most predominant toxic in the months of April and May while cocaine had a greater incidence in the months of June and July. However, the incidence of medication intoxication remained more or less stable throughout the year.

With respect to resolution of the cases, 76.3% of the patients were transferred to hospital and 0.7% refused the transfer. The mortality rate was less than 1% since only one death was observed in a 61-year-old woman for suicide by gas inhalation.

## Discussion

The current incidence of extrahospital AI found in this study (28/100,000 inhabitants) was lower than that observed in other studies at a hospital level such as that by Dorado et al.<sup>4</sup> (170/100,000 inhabitants). Extrahospital AI represents 1% of the emergencies attended which is a somewhat lower percentage than that obtained by Dorado et al. in 2000<sup>4</sup> (1.77%) who had obtained lower values in previous studies. Echarte et al.<sup>5</sup> and Iglesias et al.<sup>6</sup> observed values similar to those of the present study (1.2% and 0.8%, respectively).

The mean age of the patients was 39.8 years similar to other studies: Dorado et al.<sup>4</sup> 37 years and Ferrer et al.<sup>7</sup> 34.6 years. The distribution by

sexes was close to 50% with a slight female predominance (52% males in the study by Dorado et al.<sup>4</sup> and 65.3% males in that by Ferrer et al.<sup>7</sup>) probably because the most frequent type of intoxication was by medication in attempted suicide which is very similar to that reported in other series (45% in Dorado et al.<sup>4</sup>). However, Ferrer et al.<sup>7</sup> (20.5%) and Echarte et al.<sup>5</sup> (26.1%) published lower percentages.

Similar to Dorado et al.<sup>4</sup>, Ferrer et al.<sup>7</sup> and Echarte et al.<sup>5</sup>, alcohol was the cause of a high percentage of cases which may reach up to 45.3% in some series.

In all the recent studies, cocaine is the illegal drug most commonly consumed by young males followed by heroine.

Gas inhalation (1%) represented a low percentage in comparison with the total. Interestingly, no case of poisoning by domestic, agricultural or industrial products was reported in SUMMA 112.

A history of psychiatric care was observed in 46.9% of the patients, coinciding with the study of Echarte et al.<sup>5</sup> (43.2%), being higher than that observed by Dorado et al.<sup>4</sup> (15%) and Fernández et al.<sup>8</sup> (13%). Previous suicide attempts were reported in 19.3% while Dorado et al.<sup>4</sup> observed 7.8% and Fernández et al.<sup>8</sup> reported 2.8%. The former authors found 26.9% of the patients consumed toxic substances which is a value similar to that described by the group of Fernández with 29.8% and somewhat lower than the study by Echarte et al.<sup>5</sup> with 19.4%. In the study performed in SUMMA 112, 21.16% of the cases were habitual consumers of alcohol and 13.4% consumed other toxic substances, similar to the data reported in other series.

Antidotes were administered in 28.8% of the cases in this study, which is similar to the 30% reported by García-Baró et al.<sup>9</sup> and both are higher

than the values found by Ferrer et al<sup>7</sup> (16.64%). The use of gastric lavage and activated charcoal was similar to that of other studies, being of around 15%. Nonetheless, the most frequently used treatment was symptomatic with percentages of greater than 35% in the series of García-Baró et al<sup>9</sup> and Echarte et al<sup>5</sup>.

It can be concluded that of the AI attended in the extrahospital setting alcohol is the intoxication generating the greatest healthcare demand (26.3%) and this is higher in males. This percentage is followed by AI by medication with 22.3%, and mainly with benzodiazepines in women in attempted suicide.

There is a great variability among the different authors in relation to the selection of patients, diagnostic criteria or the types of emergency services making comparison and the establishment of valid conclusions difficult.

The limitations of a retrospective study such as this must be taken into account, including the scarcity of information, possible incomplete final diagnosis because of the retention of data by the patient or the lack of suspicion of the professionals in unspecific pictures.

Thus, multicentre, clinical and epidemiological studies should be systematically carried out to demonstrate the changes in the toxic substances used, the distribution by ages, the characteristics of the subjects, etc. This would allow healthcare resources and diagnostic and therapeutic meas-

ures to be adapted to thereby improve the care provided to intoxicated patients and prevention the appearance of diseases.

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## Intoxicaciones agudas en las urgencias extrahospitalarias

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**Objetivo:** Establecer la prevalencia de las intoxicaciones agudas atendidas por los servicios de urgencia extrahospitalarios del SUMMA 112 de la Comunidad de Madrid en el año 2005.

**Método:** Se realiza un estudio descriptivo, retrospectivo, de todos los casos de intoxicaciones agudas atendidos en este servicio en el año 2005. Se analiza la edad, el sexo, antecedentes personales, tóxico causante, tratamiento requerido en la asistencia, distribución en el tiempo y destino del paciente.

**Resultados:** El total de intoxicaciones agudas atendidas fue de 1.382, de las que el 54% fueron mujeres. La edad media fue de 40 ± 16 años. El tóxico más frecuente fue el alcohol (27%), seguido de las benzodiazepinas (17%) y cocaína (6%). Un 47% de los casos presenta antecedentes psiquiátricos y 21% de alcoholismo crónico. El tratamiento más utilizado fue el sintomático 35%, seguido de antídoto 29%, lavado gástrico 16%, carbón activo 12% y oxígeno 8%. No se han hallado diferencias notables de demanda asistencial en relación a los meses del año.

**Conclusiones:** El perfil del paciente intoxicado es un varón con ingesta aguda de alcohol y antecedentes de alcoholismo crónico; en un porcentaje algo menor, mujer con intoxicación medicamentosa en el contexto de un intento autolítico y antecedentes psiquiátricos, con episodios reiterados de autolisis. [*Emergencias* 2008;20:328-331]

**Palabras clave:** Intoxicación aguda. Urgencias extrahospitalarias. Epidemiología.