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ISSN: 2836-2322

Open Access

Pharmacy and Drug Development

Research Article

Epidemiological Profile of Acute Domestic Poisoning at the University Hospital of Sétif, Algeria

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Received Date: 21 April 2026; **Accepted Date:** 12 May 2026; **Published Date:** 18 May 2026

Abstract

Background: Acute poisoning represents a significant public health problem worldwide, with considerable morbidity, mortality, and socioeconomic impact. In Algeria, comprehensive epidemiological data on domestic poisoning remain scarce. Objective: To describe the epidemiological, circumstantial, and clinical characteristics of acute domestic poisoning managed at the University Hospital of Sétif, Algeria, and to identify the main associated factors.

Methods: A retrospective descriptive and analytical study was conducted from January 1, 2017 to February 15, 2018 (14 months). Cases were collected from the medical emergency unit, the intensive care unit (ICU), and the toxicology laboratory. All cases of acute domestic poisoning involving a toxic agent were included. Statistical analysis was performed using SPSS and Microsoft Excel. Chi-square (χ^2) tests and Cramer's V coefficient were used to assess associations between qualitative variables (significance threshold: $p < 0.05$).

Results: A total of 411 cases were recorded. The mean age was 23.24 years. A female predominance was observed (57.6%; sex ratio F/M = 1.35). The 21–30-year age group was the most affected (22.1%). Most patients were of urban origin (89.9%). Drugs were the primary toxic agent (57.3%), followed by carbon monoxide (CO) (35.4%). Voluntary poisoning was significantly associated with young adults, while accidental poisoning predominated among children. Statistically significant associations were found between the type of toxicant and age ($\chi^2 = 24.52$; $p = 0.002$; $V = 0.178$), between circumstances and age ($\chi^2 = 63.11$; $p < 0.001$; $V = 0.44$), and between circumstances and type of toxicant ($\chi^2 = 156.45$; $p < 0.001$; $V = 0.701$). Only 1.94% of cases required ICU admission.

Conclusion: Domestic poisoning at the CHU of Sétif primarily affects young adults and children, with drugs and CO as the leading agents. Significant gaps in documentation and toxicological analysis were identified. Structured toxicovigilance systems, tighter regulation of toxic substance availability, and targeted prevention strategies are urgently needed.

Keywords: Acute poisoning, Domestic poisoning, Epidemiology, Carbon monoxide, Drug intoxication, Algeria, Toxicovigilance.

Introduction

Acute poisoning constitutes one of the most pressing challenges in global public health. Their high incidence, potentially severe clinical outcomes, and the considerable socioeconomic burden they impose on healthcare systems make them a problem that cannot be overlooked. The World Health Organization estimates that toxic substance exposures — whether accidental or intentional — are responsible for a significant proportion of preventable mortality and morbidity,

particularly in low- and middle-income countries [1, 2]. Globally, unintentional poisoning is estimated to cause approximately 193,000 deaths annually, the majority of which result from preventable chemical exposures [2].

In the domestic environment, poisoning takes many different forms. Medicines left within reach, poorly labeled household products, pesticides stored under unsafe conditions, and toxic gases from defective appliances all represent everyday hazards. Drug-related poisoning occupies a central place in this spectrum, driven by the wide availability of pharmaceutical products and the growing trend toward self-medication [3, 4]. Carbon monoxide (CO), for its part, remains a major cause of serious domestic accidents, frequently linked to faulty ventilation or defective heating systems [7].

The epidemiological profile of poisoning varies considerably according to age, sex, and socio-environmental context. In young children, poisoning is almost invariably accidental, stemming from natural exploratory behavior in the absence of awareness of danger. In young adults, conversely, a substantial proportion of cases is associated with attempted self-harm, giving this phenomenon both a toxicological and a psychiatric dimension [5, 6]. Additional disparities have been documented between urban and rural settings, reflecting differences in the nature of the toxic agents involved depending on geographic and socioeconomic context, particularly with regard to agricultural pesticide poisoning [6].

In Algeria, as in many developing countries, the epidemiological data on acute poisoning remain fragmented and insufficiently exploited. The absence of structured national toxicovigilance systems limits understanding of local poisoning profiles and hinders the development of contextually appropriate prevention strategies [2]. In this setting, hospital-based studies represent an essential source of information for documenting epidemiological trends, identifying vulnerable populations, and informing public health policies.

It is in this perspective that the present study was conducted at the University Hospital (CHU) of Sétif. Its objectives are to describe the epidemiological, clinical, and circumstantial characteristics of domestic acute poisoning, to analyze their sociodemographic determinants, and to identify factors associated with severity — with a view to improving patient management and strengthening prevention efforts.

Materials and Methods

Study Design and Setting

This was a retrospective descriptive and analytical study conducted at the University Hospital (CHU) of Sétif, a tertiary care reference center serving the north-eastern region of Algeria. The study period extended from January 1, 2017 to February 15, 2018, covering a total of 14 months. Cases were collected from three complementary hospital units: the medical emergency unit (MEU), the intensive care unit (ICU), and the toxicology laboratory, in order to ensure comprehensive coverage of all clinical presentations of acute poisoning.

Study Population

Inclusion Criteria

All patients admitted for acute domestic poisoning involving an identified or suspected toxic agent were included. Eligible substances encompassed medications, phytosanitary products, toxic gases — particularly carbon monoxide (CO) — toxic plants, and any other potentially toxic substance of domestic use.

Exclusion Criteria

Cases of foodborne poisoning were excluded, as their pathophysiology and management differ fundamentally from toxicological poisoning and represent a distinct nosological entity.

Data Collection

Data were collected retrospectively from several complementary documentary sources: the poisoning register of the medical emergency unit; toxicological analysis request forms and the toxicology laboratory register; and the medical records of patients hospitalized in the ICU. A standardized data collection form was used to harmonize information gathering. Variables studied included the sociodemographic characteristics of patients (age, sex, type of residence), the circumstances of poisoning (accidental or voluntary), the nature of the toxic agents involved, and the modalities of therapeutic management.

It should be noted that missing data were observed, particularly regarding the circumstances of poisoning and the precise identification of the substances involved, especially in the medical emergency register. These documentary gaps, inherent to the retrospective nature of the study, may have limited the completeness of certain analyses and constitute a methodological limitation to be considered when interpreting the results.

Statistical Analysis

Data entry and analysis were performed using SPSS (version XX) and Microsoft Excel. Statistical analysis was conducted in two stages. A descriptive analysis was first performed for all studied variables, with calculation of frequencies and percentages for qualitative variables, and means with their standard deviations for quantitative variables. A bivariate analysis was then carried out to explore associations between qualitative variables.

Pearson's Chi-square test (χ^2) was used to assess the statistical significance of observed associations, with a significance threshold set at $p < 0.05$. When a statistically significant association was identified, the strength of this association was quantified using Cramer's V coefficient, with values ranging from 0 to 1: a value near 0 indicates a weak association, while a value near 1 indicates a strong association.

Results

Frequency of Poisoning

A total of 411 cases of acute domestic poisoning were recorded during the study period. The majority of cases were managed at the medical emergency unit (n = 276; 67.2%), followed by the toxicology laboratory (n = 127; 30.9%), while ICU admissions were infrequent (n = 8; 1.9%).

Sociodemographic Characteristics

Age Distribution

The mean age of patients was 23.24 years (range: newborn – 86 years), indicating involvement across the full age spectrum. The most represented age group was 21–30 years (22.1%), followed by children under 5 years of age (16.3%). Age data were missing for 13 patients (3.2%).

Sex Distribution

A female predominance was observed, with women accounting for 57.6% of cases and a female-to-male sex ratio of 1.35. Sex was not recorded for one patient. Cross-analysis of age and sex revealed that this female predominance persisted across most age groups, particularly in the 21–30-year bracket. Conversely, a male predominance was observed among children under 5 years of age and in patients over 60 years of age.

Residence Type

The vast majority of patients were of urban origin (89.9%). However, this variable was missing for 134 cases (32.6%), which warrants caution in the interpretation of this result. In urban areas, female predominance persisted, while the sex distribution was relatively balanced in rural areas. Regardless of age group, poisoning predominantly affected urban populations.

Characteristics of Poisoning

Circumstances of Occurrence

Circumstances of poisoning were available for only 137 of 411 cases (33.3%), representing a notable limitation of the analysis. Among documented cases, accidental (n = 28) and voluntary (n = 24) poisoning were the most frequent, with 85 cases classified as indeterminate. Accidental poisoning predominated in children, while voluntary poisoning primarily affected young adults in the 21–30-year age group. By sex, accidental poisoning was more frequent among men, while voluntary poisoning predominated among women.

Nature of Toxic Agents

Medications constituted the primary cause of poisoning, representing 57.3% of cases, followed by carbon monoxide (CO) at 35.4%. Other identified agents included household cleaning products (4.0%), phytosanitary products (2.3%), and toxic plants and cosmetics, present in marginal proportions. The etiology remained undetermined in 13 cases.

By sex, women were more frequently involved in all types of poisoning, with the exception of phytosanitary product poisoning, which predominated in men. By age, drug poisoning predominated in the vast majority of age groups, while CO poisoning was proportionally more represented in the 31–60-year age group. A close relationship between the toxic agent and circumstances was observed: CO poisoning was exclusively accidental, whereas drug poisoning was predominantly voluntary.

Analysis of the therapeutic classes implicated in drug poisoning revealed a predominance of anxiolytics (n = 43), followed by hypnotics (n = 16). The therapeutic class was unspecified in 34 cases.

Severity of Poisoning

Of the 411 cases recorded, 8 patients (1.94%) required transfer to the ICU, reflecting a severe clinical presentation. Among these serious cases, 87.5% had undergone confirmation by toxicological analysis. By comparison, toxicological analysis was performed in only 33.3% of all cases, highlighting still-limited use of this diagnostic tool outside of severe presentations.

Severe poisoning was predominantly of drug origin (75%), followed by CO poisoning and drug combinations. From a circumstantial standpoint, nearly all serious cases were of voluntary origin (87.5%).

Statistical Analysis

Association Between Type of Toxicant and Sociodemographic Characteristics

A statistically significant association was found between the type of toxic agent and age ($\chi^2 = 24.52$; $p = 0.002$; Cramer's $V = 0.178$), indicating a moderate influence of age on the nature of the implicated toxicant. No significant association was observed between the type of product and sex ($p = 0.48$), nor between the type of product and place of residence ($p = 0.789$).

Association Between Circumstances and Sociodemographic Characteristics

A significant association of moderate-to-strong intensity was found between the circumstances of poisoning and age ($\chi^2 = 63.11$; $p < 0.001$; Cramer's $V = 0.44$), confirming that accidental poisoning predominated in children while voluntary poisoning was characteristic of young adults. No significant association was established with sex ($p = 0.401$) or place of residence ($p = 0.510$).

Association Between Circumstances and Type of Toxicant

A highly significant and strong association was found between the circumstances of poisoning and the nature of the toxic agent ($\chi^2 = 156.45$; $p < 0.001$; Cramer's $V = 0.701$), rep-

resenting the most robust association in this study. Voluntary poisoning was almost exclusively associated with medications, while accidental poisoning was predominantly linked to carbon monoxide.

Variable	Non-severe cases (n = 403)	Severe cases (n = 8)
Mean age ± SD (years)	24,51 ± 17,55	15,43 ± 10,08
Female sex, n (%)	233 (57,7%) 170 5 (42,1%)	3 (42,9%) 4 (57,1%)
Urban residence, n (%)	244 (60,4%)	5 (71,4%)
Voluntary poisoning, n (%)	85 (21%)	6 (85,7%)
Drugs as main toxicant, n (%)	221 (54,7%)	6 (85,7%)
Toxicological analysis performed, n (%)	24,51 ± 17,55	15,43 ± 10,08

Table 1. Sociodemographic and Clinical Characteristics of Patients According to Severity of Poisoning

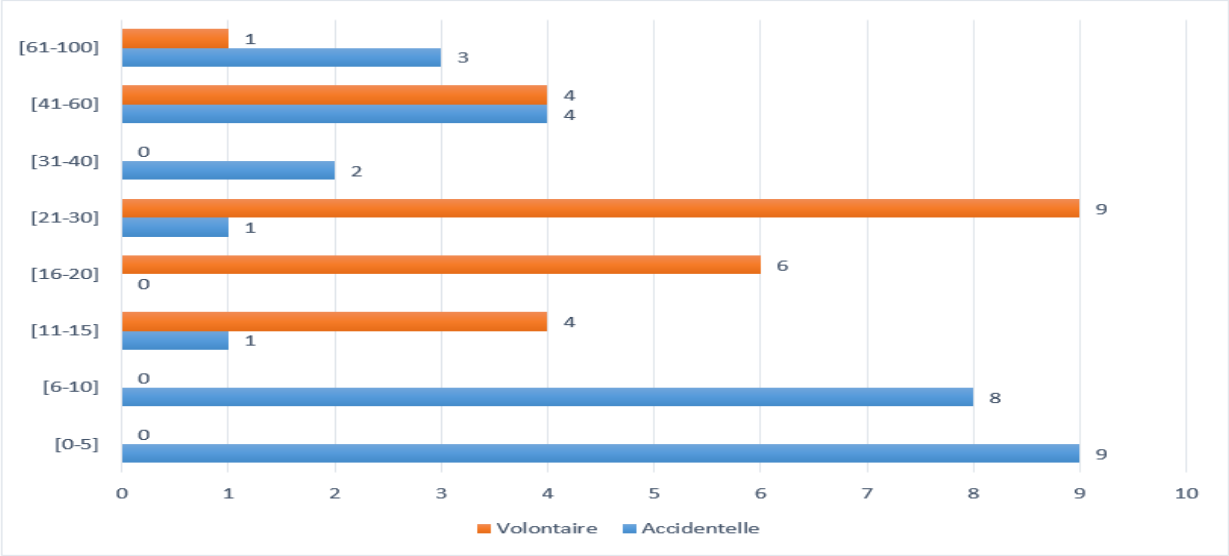

Figure 1. Distribution of poisoned patients according to age group and circumstances of poisoning.

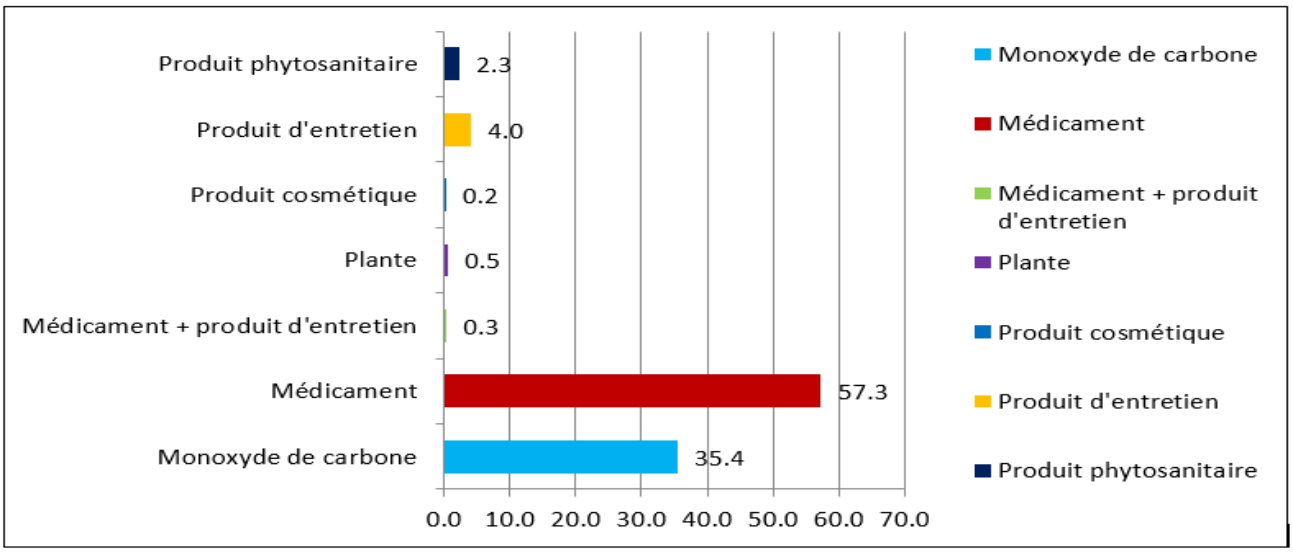

Figure 2. Distribution of poisoned patients according to the type of incriminated toxic agent.

Discussion

Frequency and Underreporting of Poisoning

During the study period, 411 cases of acute domestic poisoning were recorded at the CHU of Sétif. This figure likely represents an underestimate of the actual epidemiological burden, for several converging reasons. On one hand, only clinically severe cases spontaneously present to emergency services. On the other hand, high patient volumes and the priority given to life-threatening cases inevitably generate documentary gaps, particularly in the MEU, where only 3 of the 79 cases that gave rise to a toxicological analysis request appeared in the service's registration register [1, 2]. This finding reveals a manifest traceability dysfunction that compromises the quality of local epidemiological surveillance and constitutes a priority area for institutional improvement. Furthermore, certain types of poisoning — notably CO intoxication, managed exclusively through symptomatic treatment — do not systematically give rise to toxicological analysis requests, thereby contributing to their underrepresentation in laboratory statistics.

On a global scale, acute poisoning represents the leading cause of hospitalization in subjects under 30 years of age in high-income countries, and the second leading cause of sudden death in low- and middle-income countries [1]. This epidemiological burden is largely explained by the increasing availability of low-cost toxic substances and the insufficiency of toxicovigilance systems, justifying the urgent need for coordinated prevention and health education strategies [1, 2].

Sex Distribution

A female predominance was observed in our series (57.6%; F/M sex ratio = 1.35), consistent with the findings reported by Mahdeb et al. in a previous epidemiological study conducted at the same institution involving 4,003 cases (56.98% female; sex ratio = 1.33) [3]. This convergence between two studies conducted in the same institutional context at different time periods suggests a stable and structural epidemiological trend, independent of conjunctural fluctuations.

Several explanatory factors have been advanced in the literature. From a psychosocial perspective, women are more exposed to emotional vulnerability and social status-related pressures, which are recognized as major determinants of suicidal behavior [4]. From a behavioral standpoint, during attempted self-harm, women preferentially resort to so-called 'non-violent' methods — particularly drug ingestion — as opposed to the immediately lethal methods preferred by men, such as hanging or use of sharp instruments [5]. These observations are corroborated by international data on gender differences in suicidal behaviors [5, 6]. The male predominance observed among children under 5 years and subjects over 60 years, on the other hand, fits into a classical epidemiological pattern, reflecting greater behavioral exposure related to exploratory behavior in boys and differences in comorbidities and life expectancy in older age groups.

Although women were globally more represented across all toxic agent categories, male predominance was observed for phytosanitary product poisoning, consistent with greater occupational agricultural exposure among men in rural areas [4]. The absence of a statistically significant association between sex and the type of toxicant ($p = 0.48$) suggests, however, that these distributional differences remain of modest magnitude at the scale of the studied population.

Age Distribution

The mean age of poisoned patients was 23.24 years, with predominance of the 21–30-year age group (22.1%), consistent with regional and international data. Charra et al., in a retrospective study of 214 severe poisoning cases admitted to the ICU at CHU Ibn Rochd in Casablanca, reported a mean age of 28.55 years and predominance of the 21–30-year age group (36%) [7]. Similarly, Bkiyar et al., in a series of 121 cases admitted to the ICU at CHU of Oujda, found a mean age of 30 years [8]. This convergence of results across the Maghreb reflects a common psychosocial reality: young adulthood constitutes the age group most vulnerable to intentional poisoning, due to the multiple tensions it faces — academic failures, family conflicts, unemployment, unwanted pregnancies, and emotional or professional difficulties [7, 8]. The non-negligible proportion of children under 5 years of age (16.3%) deserves particular attention. At this age, acquisition of autonomous mobility combined with naturally exploratory behavior and inability to distinguish edible from toxic substances exposes children to a high accidental risk [9]. These data argue in favor of targeted prevention measures focusing on the secure domestic storage of medications and household products, and on parental awareness programs. The statistically significant association between age and the type of toxic agent implicated ($\chi^2 = 24.52$; $p = 0.002$; Cramer's $V = 0.178$) confirms that the nature of the toxic agent varies according to age group, with medications predominating in adults and children, and CO being proportionally more represented in the 31–60-year age group.

Residence Type

The urban predominance observed in our series (89.9%) is consistent with that reported by Mahdeb et al. (78.52% of urban or peri-urban origin) [3], and is explained by higher population density, greater diversity of available toxic agents, and easier geographic access to hospital emergency services in urban areas. Conversely, it is likely that serious poisoning occurring in rural areas is underrepresented in our series, as victims sometimes die before being transported to a hospital center. This hypothesis is corroborated by the urban overrepresentation among ICU-admitted cases. The absence of a significant association between place of residence and

type of toxicant (p = 0.789) suggests that the nature of the agents implicated is more strongly determined by individual and circumstantial factors than by place of residence.

Nature of Toxic Agents

Drug Poisoning

Medications represented the primary cause of poisoning in our series (57.3%), a finding consistent with data published in similar socio-epidemiological contexts. Mahdeb et al. reported a proportion of 39.34% at the same institution [3]. This difference in proportions between the two studies may reflect the evolution in the drug consumption context, the expansion of self-medication, and the illicit sale of medications observed in Algeria over the past decade. At the international level, the annual reports of the American Association of Poison Control Centers (AAPCC) consistently confirm the predominance of medications among the toxic agents involved in poisoning [10, 11]. The analysis of implicated therapeutic classes revealed a predominance of anxiolytics (n = 43) and hypnotics (n = 16), widely prescribed and accessible medications whose use in attempted self-harm is well documented in the regional and international literature [7, 12].

Carbon Monoxide Poisoning

Carbon monoxide constituted the second leading cause of poisoning (35.4%), consistent with data from Mahdeb et al. [3] and with epidemiological data from Maghreb countries, where defective gas heating installations and poor ventilation of dwellings constitute the main sources of exposure [13]. The exclusively accidental and collective nature of CO poisoning — capable of affecting all household members simultaneously, regardless of age or sex — explains their homogeneous distribution according to sociodemographic variables, and the absence of any association with voluntary circumstances.

Household and Phytosanitary Products

Household cleaning products, notably bleach (sodium hypochlorite), ranked third (4.0%), consistent with Mahdeb et al. [3]. The wide availability of these products, their frequent sale without adequate labeling, and their common decanting into recycled food containers particularly expose children to the risk of confusion with beverages [9]. Phytosanitary products accounted for 2.3% of cases, with male predominance reflecting greater occupational agricultural exposure [4]. Plant poisonings remained marginal (0.5%), in agreement with local data [3].

Circumstances of Poisoning and Determinants

The statistically significant and highly intense association between circumstances of poisoning and age ($\chi^2 = 63.11$; $p < 0.001$; Cramer's V = 0.44) confirms the well-established epidemiological dichotomy between pediatric accidental poisoning and voluntary young adult poisoning. In children, accidental poisoning is the rule, in the absence of any suicidal intentionality. In adolescents and young adults, self-harm attempts constitute the dominant presentation, reflecting the psychosocial vulnerability characteristic of this life stage [7, 8]. These results are consistent with those of Charra et al., who reported 86.4% of suicidal circumstances among ICU admissions [7], and Bkiyar et al. with 61.15% of intentional cases [8].

The highly significant association between the type of toxicant and circumstances of poisoning ($\chi^2 = 156.45$; $p < 0.001$; Cramer's V = 0.701) — the strongest in this study — confirms a well-documented structural relationship: medications are almost exclusively associated with self-harm attempts, while carbon monoxide is invariably implicated in domestic accidents [1, 7, 11]. The absence of a significant association between circumstances and sex (p = 0.401) or place of residence (p = 0.510) suggests that these two variables do not exercise an independent influence on the intentional or accidental nature of poisoning in our population.

Severity and Management

The ICU admission rate was 1.94% (8/411), reflecting the fact that the majority of poisoning cases managed at the MEU presented with moderate severity not requiring intensive care. This filtering role played by the MEU is fundamental in organizing the care pathway by limiting the ICU workload to truly severe cases. Serious cases were predominantly of drug origin (75%) and voluntary circumstances (87.5%), consistent with findings from Charra et al. [7] and Bkiyar et al. [8], who documented similar overrepresentation of suicidal drug poisoning among ICU admissions in Morocco.

The decision to transfer to the ICU is based on the nature of the toxicant, the initial clinical severity — assessed notably by the Poisoning Severity Score (PSS) — and the possible need for mechanical ventilation or invasive monitoring of vital functions [12]. The use of toxicological analysis, although limited to 33.3% of overall cases, reached 87.5% among ICU-admitted cases, attesting to satisfactory collaboration between the ICU and the toxicology laboratory for severe forms. Conversely, the insufficient use of analytical toxicology in the MEU (only 28.6% of recorded cases) and the aforementioned documentary traceability gaps constitute priority areas for improvement to strengthen epidemiological surveillance of poisoning in our institution.

Conclusion

This study, conducted at the University Hospital of Sétif over a 14-month period, provides an original contribution to knowledge of the epidemiological profile of acute domestic poisoning in the Algerian context. The 411 cases recorded confirm that this phenomenon represents a real and underestimated public health problem, whose management significantly mobilizes the resources of emergency, intensive care, and analytical toxicology services.

The main findings of this study can be summarized in four points. First, drug poisoning represents the primary cause of domestic poisoning (57.3%), followed by carbon monoxide (35.4%), two agents with radically opposed circumstantial profiles: the former predominantly intentional, the latter exclusively accidental. Second, the most exposed population is that of young adults aged 21–30 years, among whom self-harm attempts represent the dominant presentation, reflecting a psychosocial distress that extends beyond the strictly toxicological domain. Third, a significant female predominance is observed in voluntary poisoning, while children under 5 years constitute the most vulnerable age group to domestic accidents, highlighting the need for differentiated preventive approaches according to target groups. Fourth, statistical analyses revealed robust associations between circumstances and age ($V = 0.44$; $p < 0.001$) and between circumstances and the nature of the toxicant ($V = 0.701$; $p < 0.001$), lending analytical value to these results beyond simple epidemiological description.

At the institutional level, this study reveals significant shortcomings in documentary traceability at the MEU level, as well as insufficient recourse to toxicological analysis in moderate cases. These dysfunctions limit epidemiological surveillance and compromise the quality of care. The implementation of a unified computerized poisoning register, covering all relevant services — emergency unit, ICU, and toxicology laboratory — appears as an indispensable organizational priority.

From a public health perspective, our results support several priority intervention axes. Strengthening the regulatory framework governing the sale of medications and toxic domestic products — notably by combating illicit trade and improving product labeling — would reduce the accessibility of the most frequently implicated agents. The development of household awareness programs centered on the secure storage of hazardous substances and child accident prevention constitutes a primary prevention lever whose effectiveness is well documented in the international literature. Finally, the psychosocial dimension of voluntary poisoning in young adults calls for strengthening psychiatric care and psychological support services downstream of emergency departments, in order to prevent recurrence and address the underlying causes of these events.

Prospective multicenter studies, covering the entire Algerian territory and integrating more complete clinical, biological, and outcome data, are necessary to confirm and deepen these results, and to enable the development of evidence-based public health policies.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. World Health Organization. The public health impact of chemicals: knowns and unknowns. Geneva: WHO; 2016. Available at: https://www.who.int/publications/i/item/WHO-FWC-PHE-EPE-16-01
2. World Health Organization. Guidelines for establishing a poison centre. Geneva: WHO; 2021. Available at: https://www.who.int/publications/i/item/9789240009523
3. Mahdeb N, Mariem S, Abdelouahab B. Étude épidémiologique des cas d'intoxications aiguës traitées à l'hôpital de Sétif entre janvier 2008 et avril 2012 (Est-Algérie). European Scientific Journal. 2013;9(3). Available at: https://www.eujournal.org/index.php/esj/article/view/739
4. Eddleston, Michael, and Michael R. Phillips. "Self poisoning with pesticides." *Bmj* 328, no. 7430 (2004): 42-44.
5. Jones AL, Dargan PI. Advances, challenges, and controversies in poisoning. *BMJ*. 2002;325. doi:10.1136/bmj.325.7354.45
6. Mowry, James B., Daniel A. Spyker, Daniel E. Brooks, Naya McMillan, and Jay L. Schauben. "2014 annual report of the american association of poison control centers' national poison data system (NPDS): 32nd annual report." *Clinical toxicology* 53, no. 10 (2015): 962-1147.
7. Cariou, Marie-Estelle, Pierrick Pequin, Jean-Pierre Goullé, Alexandre Cesbron, and François Schmitt. "Intoxication au plomb par ingestion d'un remède ayurvédique d'origine vietnamienne." In *Annales de toxicologie analytique*, vol. 25, no. 3, pp. 125-127. EDP Sciences, 2013.
8. Bkiyar, Houssam, Imane Alouani, Kamal Ahsayan, Hicham Hachlaf, Brahim El Ahmadi, Safa Arib, Hayat Berekhli, Hamid Madani, and Brahim Housni. "Profil épidémiologique des intoxications aiguës en service de réanimation du centre hospitalier régional Al Farabi: à propos de 121 cas." *Anesthésie & Réanimation* 1 (2015): A259.
9. Dart RC, editor. Medical Toxicology. 3rd ed. Philadelphia: Lippincott Williams & Wilkins; 2004. ISBN: 978-0781728454
10. Mowry, James B., Daniel A. Spyker, Louis R. Cantilena Jr, J. Elise Bailey, and Marsha Ford. "2012 Annual report of the American association of poison control centers' national poison data system (NPDS): 30th annual report." *Clinical toxicology* 51, no. 10 (2013): 949-1229.
11. Persson, Hans E., Gunilla K. Sjöberg, John A. Haines, and Jenny Pronczuk de Garbino. "Poisoning severity score. Grading of acute poisoning." *Journal of Toxicology: Clinical Toxicology* 36, no. 3 (1998): 205-213.
12. Bleecker, Margit L. "Carbon monoxide intoxication." Handbook of clinical neurology 131 (2015): 191-203.

Citation: Bouchala Faiza. et,al. Epidemiological Profile of Acute Domestic Poisoning at the University Hospital of Sétif, Algeria. *J. Pharm. Drug. Dev.* Vol. 5 Iss. 1. (2026) DOI: 10.58489/2836-2322/046