Original article

Descriptive study of hospital care on toxicological events in a municipality of São Paulo State, Brazil, 2012*

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Abstract

Objective: to describe the epidemiological profile of hospital care on chemical exposure cases and accidents with venomous animals performed in a municipal hospital in São Paulo State, Brazil. **Methods**: case series descriptive study with data of medical records from the emergency department of the Municipal Hospital of Itapira-SP, in 2012. **Results**: out of 3,184 medical cases due to toxicological events (3.3% of total), the exposures to drugs of abuse (58.1%) and accidents with venomous animals (15.8%) stood out; most individuals were male (68.6%), in the age group from 20 to 59 years (74.6%); according to the medical records, 18 cases had been reported to the Information System for Notifiable Diseases (Sinan), however 249 cases were found on Sinan online. **Conclusion**: the health care profile was characterized by the predominance of exposure to drugs of abuse and accidents with venomous animals in a young adult population; most cases was not notified to Sinan, which may lead to an insufficient acknowledgement on this problem.

Keywords: Poisoning; Substance-Related Disorders; Pharmaceutical Preparations; Emergency; Medical Service; Descriptive Epidemiology.

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Introduction

The effects on health due to toxicological exposure are a topic of growing relevance, considering the increased access to chemical agents, drugs and environmental pollutants. Estimates show that, in 2004, the toxicological exposures caused 4.9 million deaths in the world, which is an admittedly underestimated number.[1]

Harms to health may derive from multiple kinds of exposure. Whilst acute poisonings tend to have more visibility in urgency and emergency services, the conditions resulting from pesticide chronic exposure, drug abuse and environmental pollutants, for example, must also be taken into consideration, because they can cause homeostasis rupture and unleash endocrine, cardiovascular and neurological diseases, cancers, and others.[2,3] Usually, health professionals do not investigate these conditions as sources of chemical exposure.

> *In Brazil, poisonings are harms of mandatory notification.*

In Brazil, poisonings are harms of mandatory notification in the Information System for Notifiable Diseases (Sinan),[4] and are registered by the National Toxicology Information System (Sinitox), which compiles the data from Toxicological Assistance Centers (CIATox). Those centers reported 99,035 cases and 397 deaths in 2012.[5] There is also the Brazilian System of Data on Poisonings (Datatox), a health information system that consolidates CIATox data, however they are not of open access.[6]

Considering the fact that hospital services are an important gateway to the Brazilian National Health System (SUS)'s assistance in cases of toxicological events, as well as the fact that the underreport of the information systems is feasible, the present study aims to describe the epidemiological profile of hospital care in cases of exposure to chemical agents and accidents involving venomous animals performed in a SUS municipal hospital in São Paulo State, Brazil.

Methods

This is a case series descriptive study, based on secondary data from the records of the Municipal Hospital of Itapira of patients assisted at its urgency and emergency services, in 2012.

Itapira is located 163 km far from to the state capital, São Paulo-SP; its population, in 2010, was of 68,537 inhabitants, and its human developing index is equivalent to 0.762.[7] The chosen hospital is the only under SUS scope in the municipality; it is medium-sized and has good local reputation regarding urgencies, emergencies and specialized hospitalization.

Among the cases identified as potential toxicological events, the following variables were extracted from the medical records:

a) Demographic
- sex;
- age; and
- patient address;

b) Reason or circumstance of the exposure
- drugs of abuse;
- accidental;
- food intake;
- therapeutic use;
- occupational exposure;
- suicide attempt;
- self-medication;
- improper use;
- improper administration;
- violence/homicide; and
- environmental pollution;

c) Groups of toxic agents
- drugs of abuse;
- venomous animals;
- medicine;
- foods and beverages;
- industrial chemical substance;
- domestic chemical substance;
- pesticides (of domestic use, agriculture use, rodenticides and veterinary products);
- cosmetics;
- metals; and
- plants;

d) Classification of the toxicological event
- acute poisoning;
- chronic poisoning;
- acute and chronic poisoning;
- sub-chronic poisoning;
- condition with possible association;
- adverse drug reaction;
- abstinence; and
- non-toxic exposure;

e) Assistance
- date of medical care;
- clinical manifestations;
- general supportive measures (medicine administration, local anaesthetic nerve block, cardiorespiratory monitoring, bandage, invasive and non-invasive respiratory support, food);
- specific supportive measures (use of antidotes, use of antivenin serum, gastric lavage, activated charcoal, eye and skin decontamination);
- complementary exams (laboratory, toxicological, imaging exams);
- concomitant clinical conditions (according to the groups in the International Statistical Classification of Diseases and Related Health Problems – 10th Revision (ICD-10), which will be described later on);
- care outcomes (discharge after assessment, observation, hospitalization);
- follow-up after discharge (primary health care unit, medical specialties, center of psychosocial care, social assistance, others); and
- reporting to information systems (Sinan and Sinitox);

f) Outcome: cure or death

The data extracted from medical records were registered on a file designed for this purpose. The cases received a final classification using the definitions adapted from medical literature,[8,9] namely:

Exposure: exposure to chemical agent or animal toxin, potentially harmful, and not resulting in clinical and/or laboratory alterations.

Poisoning/envenomation: exposure to chemical agent or animal toxin resulting in clinical and/or laboratory alterations compatible with clinical picture of toxic exposure, which can be acute (single exposure for up to 24 hours, or repeated exposure for up to 15 days), sub-chronic (repeated from 15 days to 3 months) and chronic (for more than 3 months).

Adverse reactions: harmful effects, from therapeutic exposure to a pharmacological product.

Withdrawal syndrome: apresentation of clinical and/or laboratorial harmful alterations due to an interruption of the exposure to a pharmacological product or drug of abuse, which characterizes a condition resulting from substance dependence.

Diseases and Conditions with possible association: clinical and/or laboratory condition possibly due to chemical agent exposure, although this association has not been confirmed (for example: allergies).

All the medical records and documents related to the patients assisted at the urgency and emergency department of the Municipal Hospital of Itapira were revised in the period from January 1st to December 31st, 2012; the records associated with toxicological events were selected.

All the cases of exposure poisoning and envenomation were considered toxicological events, as well as any condition resulting from the exposure to xenobiotic, including adverse drug reactions. Therefore, any condition resulting from chemical agent exposure constituted the object of the present study.

Besides the variables of interest to the study, regarding the medical care records, there was a search for notes that could indicate that the case had been reported to Sinan or CIATox. In case the report form (Sinan) was attached to the medical record, it would also be revised, and the case would account for as reported. The number of reports to Sinan of 2012 in the municipality was verified on the website of SUS Informatics Department (Datasus): http://www2.datasus.gov.br. However, this study did not have any search for key fields of Sinan database.

In the cases that presented exposure to more than one agent, the analysis considered only the most clinically important, that is, according to the assessment of the records, the agent considered was the one which was associated with a higher number – or higher intensity – of clinical manifestations and/or laboratory alterations. The toxic agents were classified into groups, similarly to the classification used by Sinan. In medicine exposures, the agents were classified according to their therapeutic group, based on the Anatomical Therapeutic Chemical (ATC) system.[10]

In the cases identified with some clinical condition along with the toxicological event, whether associated with the exposure or not, the condition was classified and presented according to the chapters of the ICD-10.

All the hospital care documents (medical records, patient's records, exams and hospitalization reports) were revised with support of the medical archive service of the hospital.

The edition and descriptive analysis of the data were performed using the software Epi Info 7™, which calculated the absolute frequencies and proportions – to the categorical variables – and measures of central tendency and dispersion – to the numerical variables. The missing data were accounted for and presented in the results as 'Ignored'.

The addresses of the residents in Itapira were geocoded into geographical coordinates. The distribution by drugs of abuse, accidents with venomous animals, medicines and total of toxicological events were presented per census tracts, in maps designed with the software Qgis 2.12.1®, in order to observe the areas of cases concentration and the differences in the distribution, according to the agent involved.

The study design observed the ethical rules in researches involving human beings, recommended by the Resolution of the Brazilian Health Council No. 466, dated December 12th, 2012, and was approved by the Ethics Committee in Research of the University of Campinas, in December 2012 (Protocol No. 182.767) and the Municipal Health Department of Itapira in November of that same year (Authorization Letter 11/2012).

Results

The medical care due to all causes held in the hospital were revised, totalizing 95,923, of which 3,184 (3.3%) were related to toxicological events.

The male sex was predominant (68.6%), with age range of 84 years and median of 38 years old. The proportions according to age groups are presented in Table 1.

There was little variation from month to month, with range of 103 cases, median of 264.5, and standard deviation of 31, being October the month with the lowest number of cases (226), and March, the month with the highest number (329). We observed an increase in cases of accidents involving venomous animals from January to April (43.1% of the cases) and from September to December (38.2% of the cases), which shows a seasonal pattern (Figure 1).

The main reasons (circumstances) of exposure were drugs of abuse (58.1%), accidental (16.7%), food or beverage intake (7.4%) and therapeutic use (4%), followed by other exposure circumstances (13.8%). It was not possible to identify the circumstances in 6.2% of the revised cases. The main groups of involved agents were drugs of abuse (58.1%), venomous animals (15.8%) and medicines (10%); the others corresponded to a smaller proportion of cases (12%), and in 4.1% of them, the agent was not identified (Table 1). Most cases were classified as acute poisoning (39.4%), chronic poisoning (29.8%), acute and chronic poisoning (13.7%) and diseases and conditions with possible association (6.4%) (Table 1).

Considering the three main groups of agents, there was a predominance of exposures to alcohol (65.9%) and non-specified drugs (19.2%), among the drugs of abuse; of accidents with scorpions (27.6%) and bees (24.9%), among the venomous animals; and of exposures to anxiolytics (11.6%) and antibiotics (7.9%), among pharmaceutical preparations; in this latter group, 28 categories of drugs were registered. The summary of the categories of the three main agent groups, as well as their stratification by sex, is presented in Table 2.

In most of the cases (95.1%), there was some clinical manifestation and therapeutic supportive measure (71.0%). Regarding the total amount of cases held due to toxic event, administration of medicines was the main supportive measure used, as it was present in 68.8% of medical care; other measures were applied in a smaller proportion, as observed in Table 3.

A total of 508 laboratory exams were performed in 97 (3.0%) patients, and 132 imaging exams in 100 (3.2%) patients. The imaging exams were mostly associated (90.2%) to trauma among individuals exposed to alcohol and illicit drugs (Table 3). The antidotes flumazenil and biperiden were used in three cases; 12 accidents involving venomous animal required antivenin serum. Toxicological analyses were performed in 32 cases: 31 alcohol dosages and one medicine dosage (Table 3).

Decontamination procedures were conducted in 53 (1.7%) individuals (Table 3), among which the records on gastric lavage pointed to physiological solution prescriptions of volumes that varied from 250 to 5,000 mL for gastric tube infusion – with no guidance on the procedure, besides few technical notes.

In 521 (16.4%) cases related to toxicological events, there were up to three clinical concomitant conditions along with the toxicological event assisted, which corresponds to a 607 total of conditions or diseases that could or could not be associated with the toxic exposure (Table 3).

Most patients (78.8%) were discharged right after the medical assessment; the others remained under observation or were admitted (Table 3). After discharge, 155 (4.9%) individuals were referred to other services, mainly to primary health care units (49.0%), centers of medical specialties (22.6%), centers of psychosocial care (12.3%) and social assistance (11.6%), for follow-up (Table 3).

There were eight deaths: six due to poisoning and two due to associated clinical conditions. Among the eight deaths, seven involved chronic exposure to alcohol and one was associated with crack cocaine ingestion.

Table 1 – Distribution of the toxicological events according to sex, age, circumstances and toxic agent group, among the individuals assisted at the Municipal Hospital of Itapira-SP, 2012

Variables	N=3,184	(%)
Sex		
Male	2,183	68.6
Female	1,001	31.4
Age group (in years)		
<1	23	0.7
1-4	138	4.3
5-9	85	2.7
10-14	74	2.3
15-19	215	6.8
20-39	1,292	40.6
40-59	1,082	34.0
60-64	134	4.2
65-69	69	2.2
70-79	58	1.8
≥80	14	0.4
Circumstances		
Drug Abuse	1,851	58.1
Accidental	531	16.7
Food intake	237	7.4
Therapeutic use	127	4.0
Occupational exposure	90	2.8
Suicide attempt	74	2.3
Self-medication	35	1.1
Others[a]	42	1.4
Ignored	197	6.2
Groups of toxic agents		
Drugs of abuse	1,851	58.1
Venomous animals	503	15.8
Medicines	318	10.0
Foods and beverages	238	7.5
Industrial chemical substance	48	1.5
Domestic chemical substance	29	0.9
Pesticides[b]	20	0.6
Others[c]	48	1.5
Ignored	129	4.1
Classification		
Acute poisoning	1,255	39.4
Chronic poisoning	948	29.8
Acute and chronic poisoning	435	13.7
Condition with possible association	204	6.4
Adverse drug reaction	197	6.2
Ignored and others[d]	145	4.5

a) Corresponds to the categories of improper use, improper administration, violence/homicide and environmental pollution.
b) Corresponds to pesticides of domestic use, agriculture use, rodenticides and veterinary products.
c) Corresponds to cosmetics, metals and plants.
d) Ignored (1.0%); and others (abstinence, non-toxic exposure and sub-chronic poisoning).

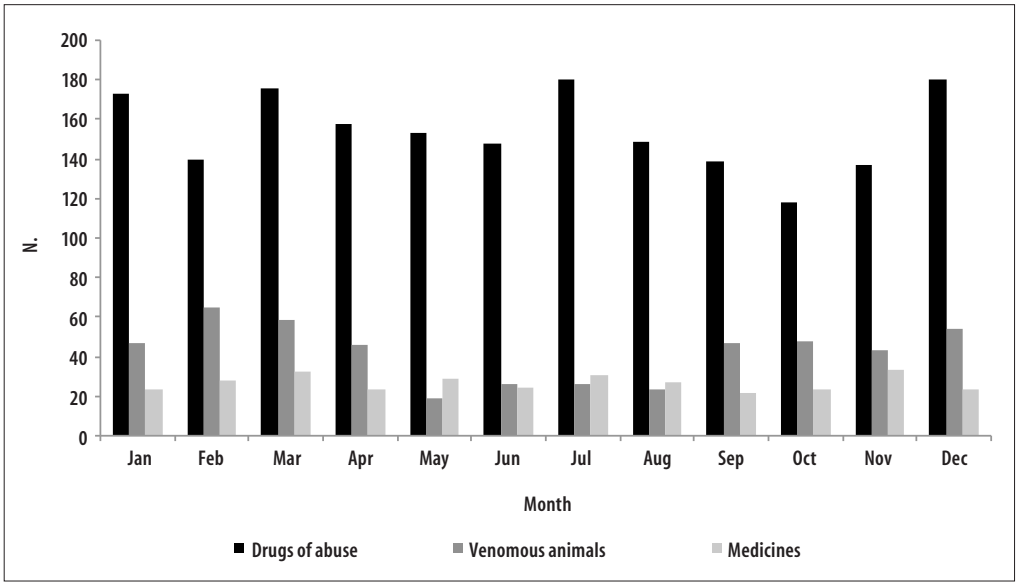

Figure 1 – Number of medical assistances due to drugs of abuse, accidents with venomous animals and medicines, among the individuals assisted at the Municipal Hospital of Itapira-SP, 2012

Table 2 – Number and proportion of toxicological events according to the three main groups of toxic agents and sex, among the individuals assisted at the Municipal Hospital of Itapira-SP, 2012

Groups of toxic agents	Male	%	Female	%	Total	%
Drugs of abuse	1,504	81.3	347	18.7	1,851	100.0
Alcohol	1,024	84.0	195	16.0	1,219	65.9
Non-specified drug	314	88.2	42	11.8	356	19.2
Tobacco	51	40.5	75	59.5	126	6.8
Cocaine	72	80.9	17	19.1	89	4.8
Crack	34	73.9	12	26.1	46	2.5
Marijuana	9	75.0	3	25.0	12	0.6
Others	–	–	3	100.0	3	0.2
Venomous animals	283	56.3	220	43.7	503	100.0
Scorpion	80	57.6	59	42.4	139	27.6
Bee	72	57.6	53	42.4	125	24.9
Spider	28	75.7	9	24.3	37	7.4
Caterpillar	16	69.6	7	30.4	23	4.6
Snake	12	85.7	2	14.3	14	2.8
Ant	6	54.5	5	45.5	11	2.2
Non-identified animal	69	44.8	85	55.2	154	30.5
Medicines	124	39.0	194	61.0	318	100.0
Anxiolytics	5	13.5	32	86.5	37	11.6
Antibiotics	15	60.0	10	40.0	25	7.9
Non-steroidal anti-inflammatory	8	34.8	15	65.2	23	7.2
Others[a]	96	41.2	137	58.8	233	73.3

a) Corresponds to other 25 groups of pharmacological agents.

During the review of the medical records, we found 18 records of accidents with venomous animal reported to Sinan, although there were 503 envenomation cases handled. On Sinan database there are 249 reports of accidents with venomous animal and one case of poisoning in Itapira, in 2012, which may indicate that a higher number of cases was reported to Sinan, but were not included in the medical records. Regarding specific care, the hospital made contact with CIATox in 10 cases (0.3%), which corresponds to a ratio of 3.1 reports to CIATox per 1,000 toxicological events.

With regard to the spatial distribution of the cases, 2.0% live in surrounding municipalities. Considering the residents of Itapira, it was not possible to georeference 255 addresses, so the analysis was performed based on 2,929 records.

When we observe all the groups of agents, without subdivisions, a heterogeneous profile can be noticed, in which the sum of the cases of residents in the neighbourhoods of Vila Penha do Rio do Peixe (7.8%), Jardim Guarujá/Istor Luppi (6.3%), Cubatão (5.8%) and Jardim Raquel (5.2%) corresponded to 25% of the occurrences. The other cases were distributed within the other neighbourhoods, each one corresponding to less than 5.0% of the records. This heterogeneity is more marked when the cases are stratified according to groups of agents, as observed in Figure 2.

Discussion

The profile of the municipality's cases, characterized by the predominance of exposures to drugs of abuse, accidents with venomous animals and pharmaceutical preparations, may not be similar to those in other municipalities, represented by the information systems, especially concerning the proportion of exposures to drugs of abuse, although the proportions of the other agents have also been different. The results shown in this study revealed an expressive number of toxic events that did not reach the information systems; therefore, the epidemiological profile at municipal level may be different from the national profile, considering the underreporting.

In Sinitox, in 2012, the records of accidents with venomous animals (31%), medicines (27%) and pesticides (10%),[5] were predominant, whilst the drugs of abuse corresponded to 8%;[5] unlike Itapira, where the drugs of abuse corresponded to the main group of agents, and pesticides represented less than 1% of cases.

A limitation to this study was the bad quality in the filling of records: scarce information, lack of details and excessive objectivity – the latter focused on practice. Such limitation raised doubts regarding healthcare aspects, patients' safety and severity of the cases, in addition to a low identification of chronic exposures to pesticides, environmental or food. In this sense, the cases identified may be considered underestimated, once the literature points to important impact on health caused by these chronic exposures.[1-3] However, we should also consider the hypothesis that, in Brazil, the qualification of health professionals does not value medical toxicology knowledge, which would contribute to the reduction of diagnoses of toxicological events.

This limitation hampered the identification of notified cases as, usually, it is reported in the medical record along with the attachment of the filled Sinan form. In almost all the cases, there was no copy of the report. Partially, this problem is a result of the method used in this study, which was performed based on secondary data. Many times, the data were incomplete in face of what this study intended to obtain.

The high number of medical care due to chronic exposure to alcohol and illicit drugs can be related to the fact that the studied hospital is the only municipal unit that required psychiatric hospitalizations for chemical dependence. Therefore, the results related to these chronic exposures may not be similar to those from health facilities that do not have this characteristic.

In different regions worldwide, there is an average proportion of cases resulting from toxicological events that corresponds to 1.2% of the medical urgencies, varying from 0.5% to 3.3% in different locations and periods of study, such as Spain (0.5 to 0.6%),[11, 12] Italy (1%),[13] Turkey (0.7%),[14] Thailand (1.4%),[15] United States of America (1%),[16] Burkina Faso (1.9%)[17] and Qatar (3.3%).[18] In Itapira, this proportion was similar to the study about Qatar,[18] where, in 2010, when the cases of a teaching hospital was assessed, only the events that occurred to individuals who were 14 years old or older and resulting from chemical and medicine exposures were took into consideration. The result was of 599 cases out of the 18,073 general care.

Table 3 – Number and proportion of toxicological events according to supportive measures, complementary exams, concomitant clinical conditions, assistance outcome, follow-up after discharge and notification records, among the individuals assisted at the Municipal Hospital of Itapira-SP, 2012

Variables	n	%
General supportive measures	2,609	100.0
Medicine administration	2,191	84.0
Local anaesthetic nerve block	120	4.6
Cardiorespiratory monitoring	86	3.3
Bandage	61	2.3
Non-invasive respiratory support	54	2.1
Others [a]	97	3.7
Complementary exams	672	100.0
Laboratory	508	75.6
Imaging exam	132	19.6
Toxicological	32	4.8
Specific supportive measures	69	100.0
Gastric lavage	41	59.4
Antivenin serum	12	17.4
Eye decontamination	9	13.0
Use of antidote	3	4.3
Gastric lavage associated to activated charcoal	3	4.3
Skin decontamination	1	1.4
Concomitant clinical conditions	607	100.0
Diseases of the respiratory system (J00-J99)	111	18.3
Injuries and consequences of external cause (S00-T98)	106	17.5
Mental and behavioral disorders (F00-F99)	81	13.3
Diseases of the nervous system (G00-G99)	74	12.2
Others	235	38.7
Assistance outcomes	3,184	100.0
Discharge after assessment	2,510	78.8
Observation	621	19.5
Hospitalization	53	1.7
Follow-up after discharge	155	100.0
Primary health care unit	76	49.0
Center of medical specialties	35	22.6
Center of psychosocial care	19	12.3
Social assistance	18	11.6
Ignored and others	7	4.5
Notification records	3,184	100.0
Sinan [b]	18	0.6
Contact with CIATox [c]	10	0.3
Not informed	3,156	99.1

a) Invasive respiratory support; food.
b) Sinan: Information System for Notifiable Diseases
c) CIATox: Toxicological Assistance Center

The proportion found in Itapira can be associated to the broad inclusion criterion, which considered all the exposures without regarding population delimitations or variables of exposure. The use of this criterion could also have an influence on the higher proportion of prevalence, ratio of consultations in urgency and emergency units and various variables, if compared to the prevalence presented in other studies.[17,19,20]

The proportion of prevalence found was also superior to the one pointed out by Sinitox, which is 0.5 cases per 1,000 inhabitants. Comparisons with Sinan data could be limited, at first, due to the fact that we did not find publications with national data from 2012; moreover, the data available at Datasus website depends on tabulation, which could result in values that are not easily recoverable, since the accessed database could change over time.

The underreporting of the systems calls the attention considering the reduced number of cases with access to a CIATox and notification records related to Sinan. This information was hampered due to the absence of reports in the medical records, so cases with access to a CIATox and a notification to Sinan may have occurred, but the notes related to them could not be found to confirm it.

The predominance of the male sex is also pointed out in other studies,[13,17,21] although, in this study, this predominance was associated to a higher number of exposures to drugs of abuse.

The most affected age group was from 20 to 59 years old both in the municipality and in Sinitox, regardless of the fact that the system presented a higher proportion of cases in the age group from 1 to 4 years (20.5%) – possibly associated to the profile of more serious cases in this age group, once the CIATox records results from specialized medical assistance.[22]

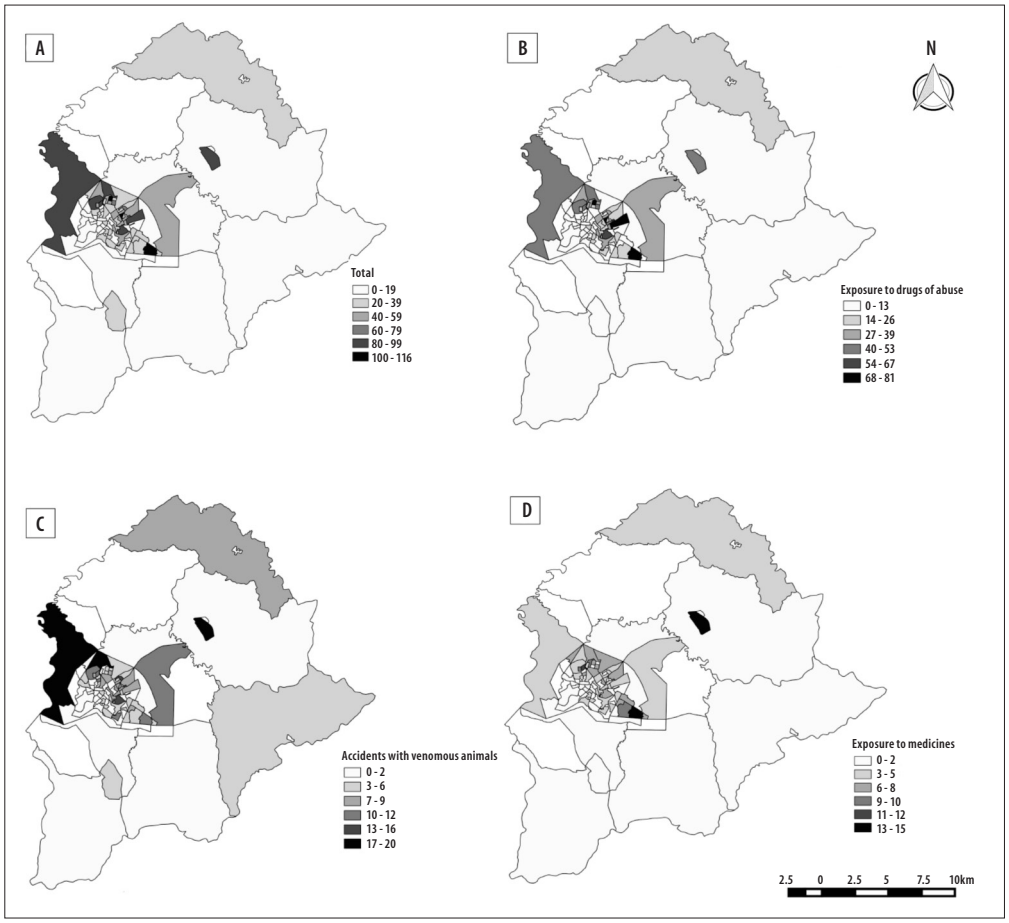

Figure 2 – Spatial distribution of toxicological events: total (A), drugs of abuse (B), accidents with venomous animals(C), and medicines (D), among individuals assisted at the Municipal Hospital of Itapira-SP, 2012

Among the three main reasons of exposure in Itapira, the cases due to drugs of abuse stand out, which indicates a serious social problem and alludes to the discussion of the role of primary and specialized care services for the users. The health professionals probably do not see these exposures as important toxicological events, in addition to the fact that their high frequency may also have an influence on the low notification in the systems.

Regarding Brazilian studies which used hospital data, there are variations among the main groups of agents, with pesticides (São Luiz-MA, from 1996 to 2000),[23] medicines (studies performed in Rio de Janeiro-RJ, from 2001 to 2002; in Pouso Alegre-MG, 2006; and in Barra das Garças-MT, from 2006 to 2009 and from 2008 to 2013),[24-27] domestic products (Rio de Janeiro-RJ, from 2001 to 2002),[24] and drugs of abuse (Pouso Alegre-MG, 2006),[25] even if in different proportions from those found for Itapira.

The profile of symptomatic cases with supportive measures was expected. However, the number of complementary exams performed was relevant, mainly those that are related to traumatic or chronic conditions due to exposure to drugs of abuse.

The findings about specific treatments show the importance of having access to antivenin serum, a fact that is possibly related to the absence of deaths from venomous animals. The prescriptions of the cases submitted to gastric lavage also calls the attention because of the large number of infusion and the lack of notes about the procedure, so that, in the totality of these cases, we could question the safety of the procedure on the notes. This characteristic may be an evidence of nonconformity to the preconized standards of care to the poisoned patient, which results in adverse events and iatrogenesis to the treatment. Moreover, the low quality of the records may indicate an underestimated number of procedures. This is an important result once the gastric lavage is a procedure of unproven efficacy and it should not be used routinely, as it may cause preventable harms.[11,21,28] This prescription must consider the criteria related to the agent, to the type of exposure, and to the individual conditions, which is why it is recommended as an exception – not a rule – in poisoning cases.[29] The deliberate and imprudent use of this intervention can be costly to the health care without offering any benefits to the patient.[29]

The proportion of chronic poisonings and the presence of conditions or diseases associated to the events is a relevant result because it propitiates another view over poisonings: not only the adverse health conditions can result from toxic exposure, but also some health conditions, previously existent, can deteriorate due to these exposures.

We observed that, among the main toxic agents, some neighborhoods, such as Vila Penha do Rio do Peixe, Jardim Raquel, Cubatão, Jardim Guarujá/Istor Luppi, Conjunto Habitacional Antônio Assad Alcici, Flávio Zacchi, Braz Cavenaghi, and even the district of Barão Ataliba Nogueira presented a higher number of cases. Other analyses will be necessary in order to verify which could be the factors associated to the higher number of occurrences of toxicological events in these neighbourhoods. It was also possible to observe a higher number of cases among inhabitants of the census tracts located in the north and east regions of the municipality, which must be clarified by future studies.

Summing up, the picture of the toxicological events assisted in Itapira describes a profile of cases that has distinct characteristics from those presented by other studies, especially in relation to the toxic agents involved, exposure causes and proportion referred to the total of medical urgencies. There is an affected contingent that was not reported to the information systems, which may lead to a partial or insufficient interpretation of the public health problem that this condition means. This panorama, regarding the methodological approach used, may also reproduce the scenario of part of the Brazilian municipalities, which can be verified by evaluating the local reports and the proportion of assisted cases at the hospital urgency departments.

Authors' Contributions

Germano LC contributed to the conception and design of the study, collection of data, analysis, interpretation and manuscript drafting. Alonzo HGA contributed to the conception and design of the study, critical revision of the analysis and discussion, and manuscript drafting. Both authors approved the final version of this study and declared to be responsible for the data presented. They also declared that there are no conflicts of interest.

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