

Assessment of Acute Poisoning Cases in Emergency Department of the Provincial General Reference Hospital in Bukavu, DR-Congo

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Abstract

Background: Acute intoxications result from intentionally or accidentally taking a relatively significant amount of a chemical substance which triggers disturbances in the level of psychophysiological functions, the complications of which may lead to mental disorders, physical causalities, and death. Any acute intoxication mostly requires emergency care. **Objective:** To highlight the prevalence, history, clinical features, emergency treatment, and prediction of acute intoxication cases referred to the emergency services at the Provincial General Reference Hospital in Bukavu, DR-Congo. **Methods:** A retrospective cross-sectional study was conducted from January 2021 to October 2022 based on an analysis of patients' medical files. Triage was performed among all-type of patient files recorded in the computerized hospital database Ebale-Sante to sort cases of intoxication. **Results:** During the observational period, 3966 emergency admissions were counted, of which 321 (8.09%) patients were identified as having acute intoxication. Among these, 100 files that containing sufficient information fit the quality criteria for this study's analysis. The victims were infants, adolescents and adults aged 1 - 45 years, and 52% were female and 48% were male. Most cases were accidental and, occurred at home, and the victims were driven to the hospital within 2 - 24 hours. The substances consumed included household products, drugs, and herbs. Resuscitation care, antidotes and supportive symptomatic medications ensured that 85% were healed and 10% experienced sequelae; however, 5%

died. **Conclusion:** Acute intoxication occurs in infants mostly accidentally though the ingestion of household products and medicines. Furthermore, suicide cases may occur in traumatized adolescents and discordant couples. People should be informed about how to store hazardous products (e.g.: drugs, household products and pesticides), which should not be available to children, to avoid unintentional poisoning. Special training in clinical toxicology is required to reduce treatment failure.

Keywords

Acute Intoxication, Patients, Emergency, Provincial General Reference Hospital, Bukavu

1. Introduction

Intoxication or poisoning is a condition that follows the administration of a relatively large amount of bioactive xenobiotics, resulting in disturbances in the levels of consciousness, cognition, perception, judgement, affect, behavior, or other psychophysiological functions and responses [1]. Acute poisoning is a hospital emergency with preventable morbidity and mortality, and it has always been a significant public health problem that causes social disasters. Data from the WHO indicate that Africa and emerging European countries have the highest rates of death from poisoning [1].

In 2015, the 55 U.S. poison control centers provided telephone advice in nearly 2.2 million cases of human exposure to poisons. Children aged under 3 years were involved in 35.6% of the cases, while children aged under 6 years accounted for approximately half of the patients (47.7%) [2].

Accidental poisoning is a frequent cause of emergency room admissions [3]. In 2016, a report by the World Health Organization (WHO) revealed that approximately 193,460 deaths are caused each year by accidental poisoning worldwide, 84% of which are in emerging countries [4]. Acute intoxications have been subdivided into criminal, suicide, and accidental events, amplified by the use of street drugs and the misuse of medicines, and their complications may lead to mental disorders, physical casualties, and death.

Canada is currently experiencing an overdose crisis that affects people from all walks of life. The Public Health Agency of Canada (PHAC), in collaboration with the provincial and territorial (PT) offices of Chief Coroners and Chief Medical Examiners, PT public health and health partners, and Emergency Medical Service data providers, release quarterly surveillance data on apparent opioid and stimulant toxicity (overdose) deaths and Emergency Medical Service responses for suspected opioid-related poisonings (*i.e.*, overdoses) [5]. Many factors can affect substance use and related harm, including a person's living situation. It is estimated that in Canada, at least 235,000 people experience homelessness in a given year and, at a minimum, 35,000 on a given night [6]. Across

the country, an additional 50,000 people a night could be experiencing hidden homelessness [6].

In Africa, the use of narcotics is on the rise and cases of criminal poisoning and suicides are numerous. In the Democratic Republic of the Congo (DRC), little is known about the extent of various involuntary or voluntary intoxications, and no published study on emergency care has been found. Therefore, the present study aimed to describe the clinical profile of acute intoxication among patients admitted to the emergency room of the Provincial General Reference Hospital of Bukavu (HPGRB) in the DRC from January 2021 to November 2022.

2. Material and Methods

2.1. Study Design and Site

This retrospective study was based on an analysis of patient records in the emergency department of the HPGRB to sort out all cases of acute intoxication among patients hospitalized from 2021 to 2022. **Figure 1** presents images of the study site. HPGRB is a tertiary medical facility of the Congolese state ceded to the Archdiocese of Bukavu in 1995 for management, located at no. 02 on Avenue Michombero in the Nkafu District of, Kadutu Commune. At the secondary level, it is a teaching hospital for universities, higher Institutes of medical techniques and institutes of health sciences. With a capacity of 450 beds, 52 private rooms and 16 standard rooms for the hospitalization of patients [7]. It is structured in departments including internal medicine; surgery; gynecology and obstetrics; pediatrics; specialties; medical biology and anatomical pathology; medical

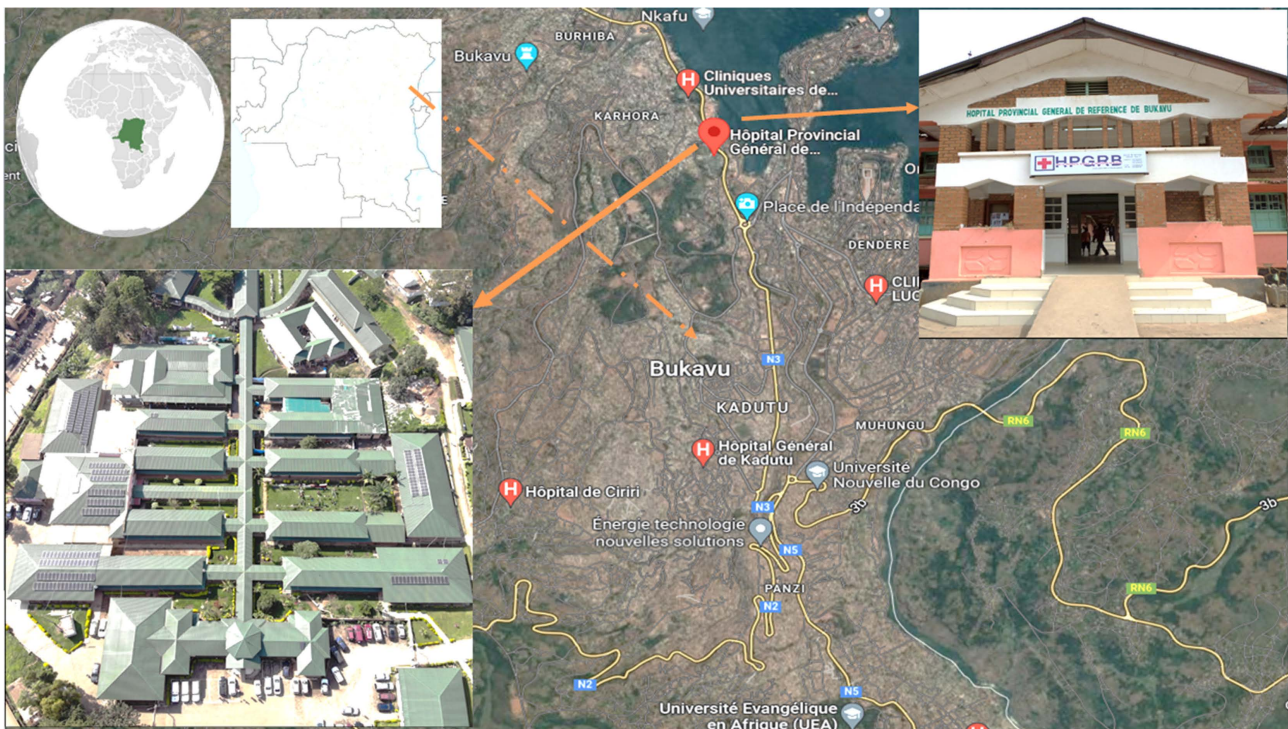


Figure 1. Images of the Provincial General Reference Hospital of Bukavu (HPGRB) [7].

imaging; an intensive care unit; emergency care services, and at mortuary. The medical staff comprises 90 doctors and, 207 nurses, as well as pharmacists, laboratory technicians, midwives and anesthesiologists.

2.2. Collection and Analysis of Patient Data

This study collected the following types of data sociodemographic (age, sex, and place of residence), clinical (neurological signs, respiratory signs, cardiovascular signs, and toxidromes), therapeutic (symptomatic treatment, specific treatment, or antidote), and predictive (duration of hospitalization, complications, and death). The patients' state of consciousness was evaluated according to their age. Patients aged 0 - 3 years were assessed using the Blantyre score, and patients over 3 years of age were evaluated using the Glasgow Coma Score.

These data were analyzed using the Epi data software package (version 3.5.4). Categorical variables were presented as counts and percentages, while quantitative variables were presented as mean and standard deviation. Records revealed that 3,966 patients were admitted to HPGRB's emergency departments during the study period (January 2021 to October 2022). Among them, 321 were admitted for acute intoxication (8.09%). Of these patients, we retained 100 records for inclusion in the study because several had missing information (**Figure 2**).

2.3. Ethics Issues

This study was conducted in accordance with the fundamental principles of the Declaration of Helsinki. The protocol was approved by the ethics committee of the Provincial General Reference Hospital of Bukavu (HPGRB).

3. Results

Figure 3 describes the characteristics of the intoxicated patients, the circumstances of their intoxication, and the toxic substances involved. From the hospital's computerized clinical record database (named Ebale-Santé), 3,966 emergency admissions were found for the study period (January 2021-October 2022), and 321 (8.09%) patients were identified with acute intoxication. Among these, 100 files containing sufficient necessary information satisfied the recruitment criteria for this study's analysis. Among the 100 cases, we counted 52 female and 48 male patients, including 30 infants (1 - 5 years), 10 school children (6 - 10 years), 19 adolescents (11 - 20 years) and 41 adults (21 - 44 years). Most (40%)

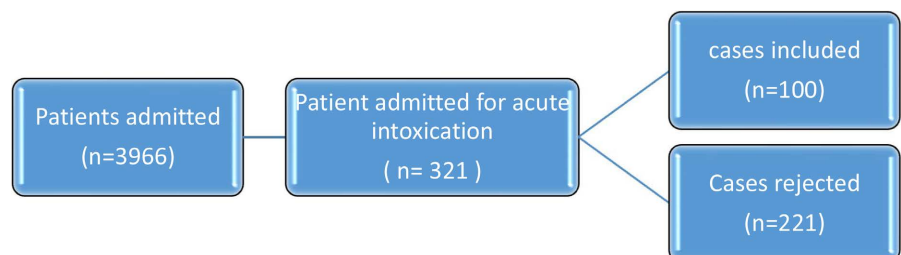


Figure 2. Patients admitted to this study's assessment of acute poisoning.

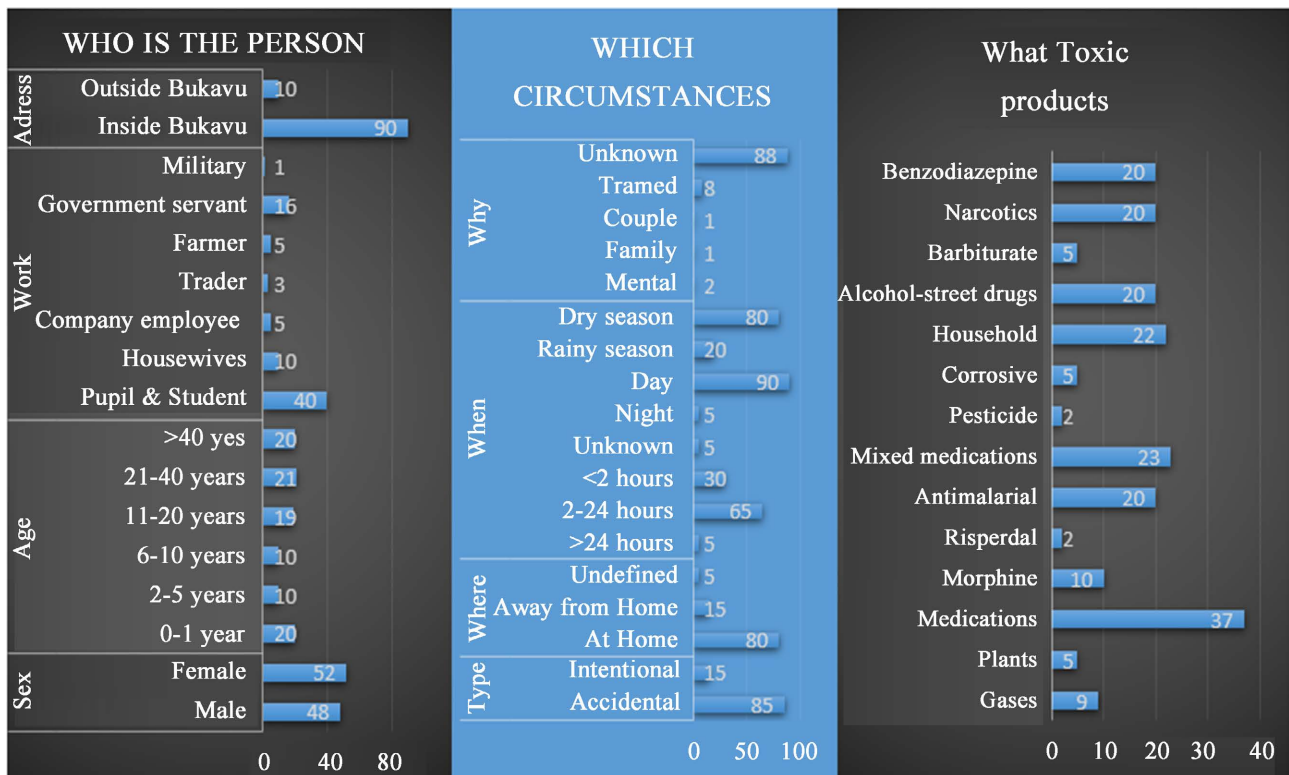


Figure 3. Characteristics, circumstances and causes of patients' admission.

were pupils and students, and most (90%) lived in the city. The intoxication was mainly accidental (85%) and occurred at home (80), during the day (90), and in the dry season (80%). Most patients arrived at the hospital between 2 and 24 h after the incident, and the reason for intoxication was not provided in the majority of cases; however, 8 individuals declared taking traditional herbals; 1 had a mental problem and another mentioned a dispute in the family or with their partner. The substances had been ingested or inhaled, including medicines, corrosive household products, alcohol, street drugs, and plant extracts.

Figure 4 presents the global toxidrome in victims at admission, treatment administered, and prognosis. This study found that 95% of patients had no pathological history, 3% had a psychiatric history, and 2% had depression. Their symptoms were mainly gastrointestinal vomiting, bronchopulmonary dyspnea, cardiovascular tachycardia, central unconsciousness, and headache. The majority had been administered IV fluids. The antidotes were oral naloxone, N-acetyl cysteine, pralidoxime, flumazenil, atropine, glucagon, and ethanol. Symptomatic treatment included bicarbonate, diazepam, proton pump inhibitors, cimetidine, and pyridoxine. For evacuation, charcoal and gastric lavage were performed. The Prognosis outcome revealed an 85% cure rate, 5% death rate, and 10% sequelae rate, including renal failure, epilepsy, and depression.

Table 1 and **Table 2** compare our findings with those of other studies in some aspects.

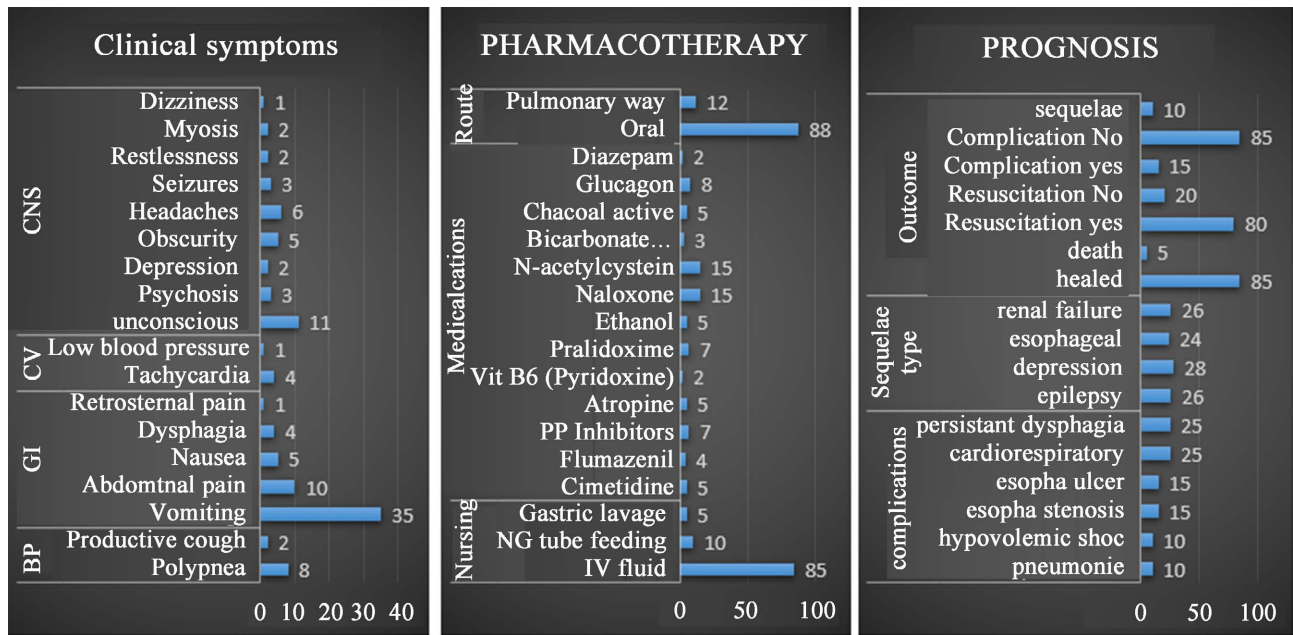


Figure 4. Global toxidrome in victims (admission, treatment administered prognosis).

Table 1. Comparison of mortality rates with other studies.

Authors	Country	Period	n	Children < 5 y (%)	Death-rate (%)
Kaishusha <i>et al.</i>	D.R. Congo	2021-2022	100	30%	1%
Bengono <i>et al.</i> [8]	Cameroon	2013-2017	158	96%	3.2%
Diallo T <i>et al.</i> [9]	Mali	2000-2010	1323	37%	2.5%
Obu <i>et al.</i> [10]	Nigeria	2014-2018	20	65%	1.5%
Edelu <i>et al.</i> [11]	Nigeria	2003-2012	65	100%	3.1%

Table 2. Comparison of accidental versus voluntary poisoning with other studies.

Authors	Country	Circumstance of intoxication	
		Accidental (%)	Voluntary (%)
Kaishusha <i>et al.</i>	D.R. Congo	85	15
Diallo <i>et al.</i> [9]	Mali	72	28
Benkirane (2009) [12]	Morocco	73.6	26.4
Lebel (2007) [13]	Québec	70.6	15.6
MacLeod (2007) [14]	Australia	78	11

4. Discussion

From January 2021 to October 2022, there were 3966 admissions at HPGRB, and we collected 321 patients admitted for acute poisonings for, a hospital prevalence of 8.09%. From a study by Irié Bi Gotri in Bouaké, Ivory Coast, between 2015 to 2018, 131 patients were admitted for acute poisoning out of 1476 admissions,

corresponding to a hospital prevalence of 8.8% [15]. This rate is compatible with other reports in literature, considering that it covers pediatric and adult cases in emergency departments [15]. It is significantly high because emergency departments receive patients quickly for immediate intervention to stabilize their condition. However, from January 2001 to June 2004 among 50,274 admissions; Modibbo identified 250 cases of acute poisoning with a hospital prevalence of 0.49% [16].

In this study, intoxication was more frequently observed in individuals aged 21 - 40 years (21%) and females (52%). This finding is consistent with a similar retrospective study in India with individuals aged 21 - 30 years (45%) and females (58.7%) [17], and one in Greece with a rate of 4.6% - 67.4% for female poisoning cases [18]. The female/male ratio was close to 1.08 in the literature examined [19]. There are also studies in which the female gender is more prevalent, such as that of Tüfekçi *et al.* [20]. In addition, the number of male patients was higher in other studies, such as that of Gokalp (2019) (53.6%) [21].

Furthermore, the majority (90%) of the victims were urban residents as opposed to rural residents. Similar studies from Greece [18] and Gondar, Ethiopia [22] also reported a high frequency of poisoning in urban residents. Still, a study in India reported a high frequency of poisoning in rural residents (69.23%) [22].

Moreover, accidental poisoning was the most common (85%) type of poisoning. However, as indicated in **Table 1**, other studies conducted in Nepal, India, and Addis Ababa, Ethiopia [23] [24] [25] have found intentional poisoning to be more common, where this type accounted for 77.8%, 79.2%, and 96.6% of poisoning cases, respectively. These differences may be related to the limitation of the study population. Studies dealing with national data may be more instructive in this regard. Most cases happened at home (80%) during the day (80%) and in the dry season (80%). This is comparable with the study in Gondar, Ethiopia [24]. The reason is that in the dry season, children spend more time outside, where they can pick up objects and swallow them. Furthermore, adults are more likely to drink alcohol, leading to alcohol intoxication. A study at a tertiary care teaching hospital in southern India reported that intoxication cases were more frequent during summer (28.1%), followed by winter (26%) [25]. This study found that a liquid dosage was the most common physical form of intoxication agents, and the oral route was the most common route of poisoning. Similarly, other studies conducted in southern India, southern Turkey, and Gondar, Ethiopia; also reported the oral route to be the most common route of poisoning [22] [25].

Medication compounds were the most (37%) frequent toxic agents used, followed by household supply (22%), alcohol and substance abuse (20%), gas (9%), corrosives (5%) and herbal remedies (5%). Drugs such as antimalarials, non-steroidal anti-inflammatory drugs (e.g., paracetamol, aspirin), and opioids (e.g., morphine, fentanyl) are easily accessible to the population exposed to self-medication. Furthermore, traditional remedies appeared to be an essential source of intoxication despite their legal safety claims. Studies in northern India

have found that organophosphates were the most common poisoning agents (57.6%) [17] [26].

Acute poisoning in adults is often voluntary as a crime or suicide. The driving impulses for suicide in our patients were mental disorders, couple disputes and family quarrels. A study conducted at Tikur Anbessa specialized teaching hospital in Addis Ababa, Ethiopia, reported temporary quarrels as the most common reason, followed by emotional disturbance [23]. In France, the SAMU of Guyana said in 2005 that acute intoxications were by suicide in 58.8% of patients and accidental in 34.1% of cases [24]. Diallo [9] found attempts at autolysis (62.8%) and abortion (29%) by voluntary ingestion of toxic products as the most ordinary circumstances. In the studies by Diallo [9] and Doumbia [16], and Maiga [15], acute drug poisoning represented more than 50%, with antimalarial as the leader. Studies in France have shown a predominance of psychotropic drugs in voluntary acute poisoning [27].

The emergency management of poisoning always includes evacuation, depuration, symptomatic, and antidote treatments. In our series, gastric lavage was performed in 29 patients, and 8 received activated charcoal. Incubation and ventilation were performed on 10 patients. All patients benefited from standard monitoring and received symptomatic treatment. Not all cases found specific antidotes. Diango and al. [28] reported that digestive disorders were the most frequent, followed by neurological disorders, which is consistent with our study.

Furthermore, the evolution was favorable in 85 patients. This development was marred by complications in 10% of cases, including hemodynamic, neurological, infectious and esophageal damage. Patients with neurological toxidrome were subsequently referred to the psychiatric department for additional treatment. During our study, a lethality rate of 5% was observed. Four out of five deaths were due to poisoning by traditional plants, while one was due to the ingestion of hydrochloric acid for a heartbreak story. Maiga [15], found a favorable evolution in 94.67% and a lethality rate of 2.7%. Sylla and al. [29] observed an excellent prognostic outcome in 67.2% of cases and hospital lethality in 13.7%.

5. Limitations

Primarily, our study was a retrospective, single-center study. The data used in the analyses were created by examining the electronic data system and patient files.

6. Conclusion

In this study, the majority of cases were accidental events. Young people and women were the most affected. Severe criminal poisoning cases were seldom rare, and digestive disorders dominated the clinical picture. In voluntary circumstances, exogenous depression caused by quarrels among family members would be the driving motive for suicide. The prognosis of these poisonings is improving thanks to recent advances in resuscitation and antidote treatment.

Although patients' vital signs, complaints, and physical examination findings are valuable in determining the severity of intoxication cases, our study did not deeply assess them. Studies involving more patients on this subject may improve the importance of our findings.

7. Summary of Future Clinical Care and Research

Our study found a statistically significant difference between the number of active agents taken or exposed to and the number of active agents according to age groups. This difference cannot explain the effects of age groups on gender differences and mortality and morbidity. More comprehensive studies on age grouping are required. Before we discuss the outcome of this study, we highlight the following specific recommendations:

- For health authorities: They must inform, educate, and communicate about the population's health to change behaviors concerning the dangers of toxic products. They should also regulate the sale of drugs, categorizing over-the-counter medicines and others that can only be dispensed by pharmacists. Hospitals should be equipped with specific antidotes and adequate laboratories for toxicological examinations. Finally, a national as well as regional clinical toxicology center should be established;
- For health personnel: they must apply the regulations to the prescription of drugs while knowing the allergies or the pathological history of patients. They must make the population aware of the dangerous products and the actions to take to help a poisoned patient. Health personnel must be more proactive in transferring patients to referral hospital emergencies instead of keeping them for longer in the health center;
- For the population: they must avoid practices such as self-medication and the administration of substances in the event of intoxication. People must be aware that traditional products are dangerous as well as learn to store toxic household and medicinal products out of children's reach.

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Ethics Approval

The study was approved by the ethical review committee of The Provincial General Reference Hospital of Bukavu (HPGRB). According to Article 32 of the Declaration of Helsinki—Ethical Principles for Medical Research Involving Human Subjects, research can only be conducted after consideration by approval from a research ethics committee in situations where consent would be impossible or impracticable to obtain. As a result, consent to review the medical records of patients was not required by the ethical review committee. Patient-related data were kept confidential throughout the study.

Data Sharing Statement

All of the datasets used/or analyzed during the current study are available from the corresponding author upon reasonable request.

Author Contributions

Both authors contributed to the data analysis and, drafting or revision of the article; gave their final approval for the version to be published; and agree to be accountable for all aspects of the work.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] World Health Organization (2020) Management of Substance Abuse. Alcohol Intoxication. World Health Organization.
https://www.who.int/health-topics/alcohol#tab=tab_1
- [2] Vonghia, L., Leggio, L., Ferrulli, A., Bertini, M., Gasbarrini, G., Addolorato, G., *et al.* (2008) Acute Alcohol Intoxication. *European Journal of Internal Medicine*, **19**, 561-567. <https://doi.org/10.1016/j.ejim.2007.06.033>
- [3] Lamireau, T., Llanas, B., Kennedy, A., Fayon, M., Penouil, F., Favarell-Garrigues, J.-C., *et al.* (2002) Epidemiology of Poisoning in Children: A 7-Year Survey in a Paediatric Emergency Care Unit. *European Journal of Emergency Medicine*, **9**, 9-14.
<https://doi.org/10.1097/00063110-200203000-00004>
- [4] Prüss-Üstün, A., Wolf, J., Corvalán, C., Bos, R. and Neira, M. (2016) Preventing Disease through Healthy Environments: A Global Assessment of the Burden of Disease From Environmental Risks. Second Edition, World Health Organization.
- [5] Government of Canada (2023) Opioid- and Stimulant-Related Harms in Canada. Government of Canada.
<https://health-infobase.canada.ca/substance-related-harms/opioids-stimulants#hospSection>
- [6] Gaetz, S., Dej, E., Richter, T. and Redman, M. (2018) L'état de l'itinérance au Canada 2016. Canadian Observatory on Homelessness Press, Toronto.
https://homelesshub.ca/sites/default/files/SOHC16_final_20Oct2016.pdf
- [7] Map and Picture of Bukavu Town Showed HGPRB.
<https://www.google.ca/maps/search/carte+g%C3%A9ographique+de+l'h%C3%B4pital+provincial+de+bukavu/@-2.5167244,28.8342208,7599m/data=!3m1!1e3?hl=fr>
- [8] Metogo Mbengono, J.A., Bengono Bengono, R., Mendimi Nkodo, J., Essame, T., Amengle, A. and Ze Minkande, J. (2015) Etiologies des décès dans les services d'urgences et de réanimation dans deux hôpitaux de la ville de Yaoundé. *Health Sciences and Disease*, **16**, 1-5.
<https://www.hsd-fmsb.org/index.php/hsd/article/view/476>
- [9] Diallo, T., Hami, H. and Maiga, A. (2013) Épidémiologie et facteurs de risque des intoxications volontaires au Mali. *Santé Publique*, **25**, 359-366.
<https://www.cairn.info/revue-sante-publique-2013-3-page-359.htm>
<https://doi.org/10.3917/spub.253.0359>

- [10] Obu, D.C., Orji, M.C., Muoneke, U.V., Asiegbu, U.V. and Ezegbe, G.O. (2020) Accidental Childhood Poisoning in Paediatrics Department of a Tertiary Care Facility: A Retrospective Review. *Nigerian Journal of Paediatrics*, **47**, 215-220. <https://www.ajol.info/index.php/njp/article/view/198382>
<https://doi.org/10.4314/njp.v47i3.4>
- [11] Edelu, B.O., Odetunde, O.I., Eke, C.B., Uwaezuoke, N.A. and Oguonu, T. (2016) Empoisonnement accidentel de l'enfance à Enugu, South-East, Nigeria. *Annals of Medical and Health Sciences Research*, **6**, 168-171.
- [12] Benkirane, R., Pariente, A., Achour, S., Ouammi, L., Azzouzi, A. and Soulaymani, R. (2009) Prévalence et prévention des événements indésirables liés aux médicaments dans un hôpital universitaire: Une étude transversale. *Eastern Mediterranean Health Journal*, **15**, 1145-1155. <https://pubmed.ncbi.nlm.nih.gov/20214128/>
- [13] Lebel, G., Gingras, S. and Lévesque, B. (2007) Épidémiologie descriptive des principaux problèmes de santé reliés AL'exposition AL'amiante au Québec, 1981-2004. Unité de recherche en santé publique du Centre de recherche du CHUL-CHUQ, 39. <https://www.inspq.qc.ca/sites/default/files/publications/651-epidmdescprobsanteamianteqc1981-2004.pdf>
- [14] MacLeod, J.B. and Hungerford, D.W. (2011) Visites pour blessures liées à l'alcool: Connaissons-nous la prévalence réelle dans les centres de traumatologie américains? *Blessures*, **42**, 922-926.
- [15] Sylla, M., Coulibaly, Y., Dicko, F. T., Kourouma, N., Togo, B. and Keita, M.M. (2006) Intoxication aiguë accidentelle chez l'enfant au service de pédiatrie de l'hôpital Gabriel Touré. *Le Mali Medical*, **21**, 50-53. <https://pubmed.ncbi.nlm.nih.gov/22766275/>
- [16] Samaké, B.M., Coulibaly, Y., Diani, N., Dramé, A.I., Cissé, M.A., Doumbia, M.Z., Sanou, F. and Diallo, A. (2011) Profil épidémiologique des intoxications aiguës au C.H.U. Gabriel Touré. *Le Mali medical*, **26**, 34-36. <https://pubmed.ncbi.nlm.nih.gov/22766275/>
- [17] Hakim, A., Khurshid, R., Mufti, S., Krishan, K. and Singh, Y. (2014) Pattern, Profile and Outcome of Poisoning Cases: A Study at a Large Teaching Hospital in India. *JK Practitioner*, **19**, 36-40.
- [18] Exiara, T., Mavrakanas, T.A., Papazoglou, L., Papazoglou, D., Christakidis, D. and Maltezos, E. (2009) A Prospective Study of Acute Poisonings in a Sample of Greek Patients. *Central European Journal of Public Health*, **17**, 158-160. <https://pubmed.ncbi.nlm.nih.gov/20020606/>
<https://doi.org/10.21101/cejph.a3522>
- [19] Mansori, K., Soori, H., Farnaghi, F., *et al.* (2016) A Case-Control Study on Risk Factors for Unintentional Childhood Poisoning in Tehran. *Medical Journal of the Islamic Republic of Iran*, **30**, 355. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4934449/>
- [20] Tüfekçi, I.B., Curgunlu, A. and Sirin, F. (2004) Caractéristiques des cas d'intoxication aiguë chez l'adulte admis dans un hôpital universitaire d'Istanbul. *Human & Experimental Toxicology*, **23**, 347-351. <https://doi.org/10.1191/0960327104ht460oa>
- [21] Gokalp G. (2019) Évaluation des cas d'empoisonnement admis à l'urgence pédiatrique. *International Journal of Pediatrics & Adolescent Medicine*, **6**, 109-114. <https://doi.org/10.1016/j.ijpam.2019.07.004>
- [22] Adinew, G.M., Woredikal, A.T., DeVos, E.L., Birru, E.M. and Abdulwahib, M.B. (2017) Cas d'empoisonnement et leur prise en charge dans les centres d'urgence des hôpitaux publics du nord-ouest de l'Éthiopie. *Journal Africain de Médecine d'Urgence*

Revue Africaine de la Médecine d'Urgence, **7**, 74-78.

- [23] Desalew, M., Aklilu, A., Amanuel, A., Addisu, M. and Ethiopia, T. (2011) Pattern of Acute Adult Poisoning at Tikur Anbessa specialized Teaching Hospital, a Retrospective Study, Ethiopia. *Human & Experimental Toxicology*, **30**, 523-527. <https://doi.org/10.1177/09603271110377520>
- [24] Marahatta, S.B., Singh, J., Shrestha, R. and Koju, R. (2009) Cas d'Empoisonnement au Service des urgences de l'hôpital Dhulikhel de l'hôpital Universitaire de Katmandou. *Kathmandu University Medical Journal (KUMJ)*, **7**, 152-156. <https://doi.org/10.3126/kumj.v7i2.2711>
- [25] Jesslin, J., Adepu, R. and Churi, S. (2010) Évaluation de la prévalence et de l'incidence de la mortalité due à un empoisonnement dans un hôpital universitaire de soins tertiaires. *Indian Journal of Pharmaceutical Sciences*, **72**, 587-591.
- [26] Maheswari, E., Abraham, L., Chacko, C.S., Saraswathy, G.R. and Ramesh, A.C. (2016) Assessment of Pattern Severity and Outcome of Poisoning in Emergency Care Unit. *Journal of Applied Pharmaceutical Science*, **6**, 178-183. <http://japsonline.com/index.php> <https://doi.org/10.7324/JAPS.2016.601225>
- [27] Baud, F.J., Martel, P., Aegerter, P. and Guidet, B. (2013) Évolution de 1997 à 2008 des Intoxications Admises en réanimation. Données franciliennes (CUBRéa). In: *Intoxications aiguës, Références en réanimation. Collection de la SRLF*, Springer, Paris, 13-24. https://doi.org/10.1007/978-2-8178-0301-2_2
- [28] Alknane, A., A.G., Coulibaly, Y., Diango, D.M., Maiga, B.A. and Teme, A. (2011). Aspects Épidémio-Cliniques et Pronostics des Intoxications Aigues aux médicaments et autres produits chimiques au Mali. *Mali Santé Publique*, **1**, 102-103.
- [29] Sacko, K., Maiga, B., Diakitè, A.A., Traoré, F., Togo, P., Coulibaly, O., Doumbia, A.K., Konaté, D., Diakitè, F.L., Konaré, H., Dembélé, A., Diall, H., Cissé, M.E., Touré, A., Traoré, M., Coulibaly, Y.A., Diarra, D., Dicko, F.T., Sylla, M. and Togo, B. (2019) Les intoxications accidentelles domestiques de l'enfant au Chu Gabriel Touré. *Le Mali Médical*, **34**, 1-5. <https://pubmed.ncbi.nlm.nih.gov/35897216/>

Abbreviations

HPGRB: Provincial General Reference Hospital of Bukavu

IV: Intravenous

NG: Nasogastric

PPI: Proton Pump Inhibitor

Questionnaire de L'étude

Thème: Aspects épidémiologiques, cliniques et thérapeutiques des intoxications aiguës au service d'accueil des urgences dans la ville de Bukavu (Sud-Kivu): cas de l'Hôpital Provincial Général de Référence de Bukavu (HPGRB)

Fiche d'enquête

Numéro de la fiche: / _ _ /

Date: /2022/ _ _ / _ _ /

1-Identification du malade

N° dossier /...../

Date d'admission: /...../...../...../

Heure d'admission: /..... /..... /

Nom: //

Prénom: / /

Age: / / Ans

Sexe: M /... / F / /

Profession: / /

Provenance: / /

2-lieu d'intoxication:

Domicile: /...../

Milieu hospitalier: /...../

Champs:

Autres (à préciser): //

3-Voies d'intoxication

Orale: / /

Rectale: / /

Cutanée: / /

Respiratoire: / /

Vaginale: / /

4-circonstances d'intoxication:

Tentative d'autolyse: / /

Tentative d'abortive: / /

Travaux champêtres: / /

Tentative d'homicide: / /

Tentative accidentelle: / /

5-Intoxications selon la classe pharmacologique du produit

Classe pharmacologique	Choix de réponse
Antipaludéen	
Antipyrétique	
Poly médicaments	
Benzodiazépine	
Dérivée morphinique	
Antihistaminique	
Anti-inflammatoire	

6-Type d'intoxication

Type d'intoxication	Choix de réponse
Médicamenteuse	
Produits corrosifs	
Alimentaire	
Gaz	
Organophosphorés	
Hydrocarbure	

7-Tableau clinique présenté à l'entrée pour un patient pris en charge pour l'intoxication:

7.1. Signes cliniques:

Signes cliniques	Choix de réponse
Troubles neurologiques	
Troubles digestifs	
Troubles respiratoires	
Troubles cardio-vasculaires	

7.2. Signes neurologiques

Troubles neurologiques	Choix de réponse
Altération conscience	
Obnubilation	
Agitation psychomotrice	
Céphalées	
Myosis	
Vertiges	
Convulsions	

7.3. Intoxication selon les troubles digestifs

Troubles digestifs	Choix de réponse
Douleur abdominale	
Vomissement	
Douleur rétro-sternale	
Diarrhée	
Nausée	
Dysphagie	

7.4. Intoxications selon les troubles respiratoires

Troubles respiratoires	Choix de réponse
Hypersécrétion bronchique	
Polypnée	
Pause respiratoire	
Toux sèche	

7.5. Intoxication selon les troubles cardiovasculaires

Troubles cardiovasculaires	Choix de réponse
Hypotension artérielle	
Hypertension artérielle	
Bradycardie	

8. Traitement pour patient(e) intoxiqué(e)**8.1. État du patient: conscient /...../ ou Inconscient/...../****8.2. Traitement à l'entrée:**

- Lavage gastrique: / /
- Lavage cutané: / /
- Administration antidote: / /
- Autres gestes thérapeutiques: / /

8.3. Orientation du patient pendant le triage:

- Accueil: / /
- Déchoquage: / /
- Réanimation en urgence: / /
- Hospitalisation: / /

8.4. Traitement symptomatique

Traitement symptomatique	Choix de réponse
Prise d'une voie veineuse périphérique	
Monitoring standard	
Perfusion NAACL physiologique	
Oxygénothérapie	
Intubation et ventilation artificielle	

8.5. Traitement spécifique: administration des antidotes

Antidotes	Choix de réponse
Diazépam	
N-acétylcysteine	
Flumazénil	

Continued

Naloxone	
Atropine	
Autres (spécifier:)	

9.- Evolution de l'état du patient intoxiqué**9.1. Durée en urgence:**

- Durée de séjour: / / en jour

- Survenu de complications: Non / /, oui / /

Choix des complications plus fréquentes:

Les complications pour les patients en urgences	Choix de réponse
Ulcérations œsophagiennes	
Dysphagie persistante	
Pneumopathie d'inhalation	
Arrêt cardio-respiratoire	
Choc hypovolémique	
Sténose œsophagienne	
Accident vasculaire hémorragique	

9.2. Bilan d'investigation des défaillances d'organe

Défaillance d'organes	Bilan d'investigation	Choix de réponse
Accident vasculaire hémorragique	TDM cérébrale	
Pneumopathie d'inhalation	Rx du Thorax	
Sténose œsophagienne	FOGD	
Ulcérations œsophagiennes	FOGD	
Arrêt cardio-respiratoire	NFS, Ionogramme, créat, NFS	
Choc hypovolémique	NFS, Ionogramme, urée, créat, transaminase	
Dysphagie persistante	FOGD	

9.3. État d'évolution du patient intoxiqué

État d'évolution du patient	Choix de réponse
Guérison	
Décès	