



**IASP Special Interest Group (SIG) on the Prevention of Intentional Pesticide Poisoning**

**Bibliography: Africa**

Abula, T. and Y. Wondmikun (2006). "The pattern of acute poisoning in a teaching hospital, north-west Ethiopia." Ethiop Med J **44**(2): 183-189.

OBJECTIVES: Poisoning by means of hazardous chemicals through ignorance, mishap or intentionally is becoming a serious health problem worldwide. Epidemiological data on this important health issue are, however, scarce in Ethiopia. The purpose of this study is to assess the pattern of acute poisonings and determine the approaches employed for the management of poisoning. PATIENTS AND METHODS: The medical records of patients with acute poisonings presented to the Gondar University hospital between July 2001 and June 2004 were reviewed retrospectively. RESULTS: One hundred and two patients presenting to the emergency department of the hospital were due to acute poisoning; accounting for about 0.45% of emergency room admissions. Organophosphates, rat poison and alcohol were the commonly encountered poisoning agents (in about 70% of cases) mainly in adults possibly with suicidal or para-suicidal intention. The approaches employed in the management of poisoning mainly involved gastrointestinal decontamination procedures. Specific antidotes were used in a substantial number of patients. The fatality rate was 2.4%. CONCLUSION: Poisoning with suicidal intention is becoming a serious health problem particularly in adults. Pesticides are commonly used toxicants. The approaches in the management of poisoning are justifiable in some cases. However, much is to be done to improve the recording of patient-related information and record-keeping processes. Further large scale studies are required to investigate national trends of poisoning and factors associated with poisoning.

Dong, X. and M. A. Simon (2001). "The epidemiology of organophosphate poisoning in urban Zimbabwe from 1995 to 2000." Int J Occup Environ Health **7**(4): 333-338.

The objective of this study was to examine current organophosphate usage in Zimbabwe. A cross-sectional descriptive study was done to determine the trends in admissions for organophosphate poisonings in an urban Zimbabwe hospital from 1995 to 2000. Variables such as sex, age, season, geographic area, and intent were examined. In 183,569 records, 599 cases of organophosphate poisoning were found. Organophosphate poisonings increased by 320% over the six years. The male and female admissions' rates were similar (48% vs 52%); 82% of the patients were less than 31 years old. Suicide was the predominant reason for poisoning (74%). Of admissions of children under the age of 10, 62% were due to accidental ingestion. Mortality from organophosphate poisonings was 8.3% over the six years. Organophosphate poisoning is increasing rapidly. In the background of this alarming trend is the physical, mental, and social state of a Zimbabwean society wrought with hardships.

Dzamalala, C. P., D. A. Milner, et al. (2006). "Suicide in Blantyre, Malawi (2000-2003)." J Clin Forensic Med **13**(2): 65-69.

In an attempt to identify at risk individuals, we analysed available information for individuals who committed suicide in Blantyre, Malawi. A retrospective audit of suicides autopsied at the Queen Elizabeth Central Hospital and the University of Malawi College of Medicine mortuaries between January 2000 and December 2003 was analysed by age, sex, residential location, and

mode of suicide. Eighty-four suicide cases (65 males, 19 females) represented 17% of all autopsies. The major mode of suicide in Blantyre was chemical poisoning using an agricultural pesticide, accounting for 66 cases (79%)-49 males (76%), 17 females (89%). There were no cases of poisoning by therapeutic medicines, self-immolation or incised wounds. The majority of cases were from one major urban area, Limbe, and one peri-urban area, Chileka. The demographics of suicide in Malawi differ from those reported for other African countries (e.g., lower proportion of females, no use of therapeutic medicine in poisoning, few gunshots). This audit highlights a need for investigations into the sale and use of agricultural pesticides. A prospective study of social and demographic factors around suicide should be undertaken to target groups at highest risk.

Kinyanda, E., H. Hjelmeland, et al. (2004). "Deliberate self-harm as seen in Kampala, Uganda - a case-control study." Soc Psychiatry Psychiatr Epidemiol **39**(4): 318-325.

**OBJECTIVES:** A study to investigate deliberate self-harm (DSH) in an African context was undertaken in Uganda. **METHODS:** A case-control study in which 100 cases of DSH and 300 controls matched on age and sex were recruited from three general hospitals in Kampala and subjected to a structured interview using a modified version of the European Parasuicide Study Interview Schedule I. **RESULTS:** Among the cases, 63% were males, with a male to female ratio of 1.7:1 and a peak age range of 20-24 years. Higher educational attainment, higher socio-economic class and poor housing were significantly associated with DSH. District of current residence, district of birth, religion, ethnicity, marital status, number of children, current living arrangement, area of usual residence, employment status of respondent and partner were not significantly associated with DSH. Pesticides and medications, mainly antimalarials and diazepam, were the main methods of DSH used. The most commonly reported psychiatric disorders were adjustment disorder, acute stress reactions and depression. **CONCLUSION:** DSH in Uganda appears to predominantly afflict the young. Disturbed interpersonal relationships, poverty and loneliness were important factors in the immediate precipitation of this behaviour. The fact that pesticide poisoning is still the predominantly used method in DSH in this area calls for a review of the legislation that controls the sale and availability of these agricultural chemicals.

London, L., R. I. Ehrlich, et al. (1994). "Notification of pesticide poisoning in the western Cape, 1987-1991." South African Medical Journal **84** (5): 269-272.

There is a paucity of data on pesticide-related morbidity and mortality in South Africa. A review of notifications to the western Cape office of the Department of National Health and Population Development from 1987 to 1991 was undertaken to describe the epidemiological profile of pesticide poisoning in the region. Two hundred and twenty-five cases of pesticide poisoning were identified, of which the majority were from rural areas. Farmers, farm workers and their families were most frequently involved in poisoning events, which included accidents arising outside of workplace production (44%), self-inflicted injury (35%) and direct occupational contamination (11%). Farm pesticide stores were the most frequent source of

pesticide and a seasonal variation in the trend of poisoning events could be discerned; this corresponded to agricultural spraying practices in the region. The mortality rate was significantly higher among those with self-inflicted injury, particularly farm workers. A concurrent review of hospital admissions for 1991 found that 78% of cases had not been notified. In view of the key role of surveillance in reducing pesticide-related morbidity and mortality, a call is made to improve notification of pesticide poisoning so as to facilitate control of an important potential public health problem.

Ndosi, N. K., M. P. Mbonde, et al. (2004). "Profile of suicide in Dar es Salaam." East Afr Med J **81**(4): 207-211.

**OBJECTIVE:** To investigate individual socio-demographic characteristics of suicides, the reasons, methods and means employed to commit suicide. **DESIGN:** A descriptive prospective study of suicides. A structured questionnaire was employed to enquire the details of the itemised objectives. **SETTING:** Muhimbili National Hospital--in urban Dar es Salaam. **SUBJECTS:** Fifty three males and 47 females consecutive suicides aged 15 to 59 years **RESULTS:** The mean age for suicides was found to be 28.2 years. Males were more than females and were ten years older. Sixty two percent of the subjects were single, 30% married. Seventy two percent had primary school education, 19% secondary education. Main reasons for committing suicide were established in 61 cases of which 57.3% (35/61) were due to severe marital and family conflicts, overwhelming disappointments in love affairs and unwanted pregnancies. Eleven subjects with chronic somatic illnesses killed themselves due to unbearable physical pain and overwhelming economic deprivations motivated ten subjects to take their lives. Sixty nine subjects poisoned themselves predominantly using anti-malarials and pesticides while 27 hanged themselves. A third of the suicides consumed alcohol frequently and a quarter of the suicides were HIV positive, a rate twice the national prevalence for sexually active adults. **CONCLUSION:** Comparatively, women became vulnerable to suicide at a younger age. Dysfunctional social networks played a predominant role among suicides. Family and marital conflicts need closer social attention and timely counseling. Patients with chronic medical conditions and frequent alcohol use need effective exploration concerning suicidal ideation to avert self-annihilation. A policy to control prescriptions of toxic drugs including pesticides is overdue.

Tagwireyi, D., D. E. Ball, et al. (2006). "Toxicoepidemiology in Zimbabwe: pesticide poisoning admissions to major hospitals." Clin Toxicol (Phila) **44**(1): 59-66.

**BACKGROUND:** Acute pesticide poisoning (APP) is a well-recognized cause of morbidity and mortality but is not well described in developing countries. We describe the toxicoepidemiology of APP in Zimbabwe. **METHODS:** All cases of APP admitted to eight major referral hospitals in Zimbabwe from January 1998 to December 1999 (inclusive) were identified using ICD-9 codes and ward registers and relevant information recorded on a standard data collection sheet. **RESULTS:** There were a total of 914 single pesticide exposures. Almost half (49.1%) resulted from oral exposure to rodenticides, 42.2% from anticholinesterase-type pesticides (AChTP), mostly organophosphates (OP) that were responsible for over 90% of admissions from AChTP. Accidental and deliberate self-poisoning (27.1% and 58.6%,

respectively) accounted for most cases with only eight homicides. The case fatality rate (CFR) in deaths/100 admissions was 6.8 [62 deaths; 95% Confidence Interval (CI) 5.2-8.6] and was significantly higher in males (9.4) than females (4.1) (CI for difference in proportions; 2.0-8.5). In addition, the CFR for deliberate self-poisoning (DSP), 6.5 deaths/100 admissions, was also significantly higher than that for accidental poisoning (0.8 deaths/100 admissions) (CI for difference in proportions 3.2-7.9). Organophosphates were implicated in 70.9% of all fatalities, with over 20% resulting from oral exposure to rat poison (RP). CONCLUSION: Organophosphates and rat poison (RP) are the leading causes of APP admissions to major referral hospitals in Zimbabwe, with most of the admissions being the result of deliberate self-poisoning. Greater control in the sale and use of these products could help prevent significant morbidity and mortality.

Tagwireyi, D., D. E. Ball, et al. (2002). "Poisoning in Zimbabwe: A survey of eight major referral hospitals." Journal of Applied Toxicology **22** (2): 99-105.

A retrospective study of the pattern of poisoning cases admitted to eight major urban referral hospitals in Zimbabwe over a 2-year period (1998-1999 inclusive) was conducted to describe the pattern of poisoning at these centres. There were a total of 2764 hospital admissions due to poisoning, involving a total of 2846 toxic agents. Accidental poisoning (AP) and deliberate self-poisoning (DSP) accounted for 48.9% (1352 cases) and 41.3% (1142 cases), respectively. With AP, the highest number of cases (45.9%) occurred in children below the age of 5 years, with half of these due to chemicals, mainly paraffin. In the DSP group, however, more than 60% of all cases occurred in the 16-25-year age group. In addition, twice as many females as males were admitted for DSP compared with an overall male female ratio of 1:1.2. Pesticides (31.4%) and pharmaceuticals (30.4%) were the most common groups of toxic agents responsible for the hospital admissions. Unknown toxins, natural toxins and pesticides showed the highest mortality rates (15.4%, 8.3% and 6.7%, respectively). Compared with the last major survey of poisoning in Zimbabwe, the pattern of poisoning at referral hospitals has changed over the last decade, with an increase in pesticide and pharmaceutical cases and a marked fall in cases of traditional medicine poisoning. Educational and legislative interventions may be required to address these changes. There is the need also to investigate further the high mortality rates associated with traditional medicine poisoning. Copyright 2002 John Wiley & Sons, Ltd.

Tunde-Ayinmode, M. F. and O. A. Adegunloye (2011). "Parenting style and conduct problems in children: A report of deliberate selfpoisoning in a Nigerian child." South African Journal of Psychiatry **17** (2): 60-63.

A correlation between unhealthy parenting styles and child psychopathology has been established. This case report describes how chronic harsh paternal parenting caused a young boy to deliberately poison himself with organophosphate chemicals (rat poison). This report is intended to stimulate the interest of physicians and psychiatrists in parenting style research and in how parenting style modification can be a therapeutic and preventive tool.

Veale, D. J., C. A. Wium, et al. (2011). "Amitraz poisoning in South Africa: a two year survey (2008-2009)." *Clin Toxicol (Phila)* **49**(1): 40-44.

**INTRODUCTION:** Analysis of the annual pesticide poisoning statistics of the Tygerberg Poison Information Centre (TPIC) for the period 2005-2007 showed an increase in the number of amitraz poisonings. This prompted a 2-year survey (2008-2009) to establish the extent of amitraz poisoning in South Africa. Amitraz is a pesticide used as a tick dip. It acts as an alpha(2)-adrenoceptor agonist and the principal clinical effects of amitraz poisoning are related to its stimulation of these receptors; **METHODS:** Data from amitraz poisoning cases in humans were evaluated for 2 years and analyzed for: demographic data, type of exposure, type of formulation, and clinical details. Serious cases were followed up; **RESULTS:** 4.6% of the pesticide poisoning cases were amitraz-related which comprised 0.8% of all TPIC poisoning consultations. Ingestion of amitraz formulations accounted for the majority of the cases (94%). Forty-one percent of cases were children (n = 28) and all were accidental exposures. Of the adult cases (59%), 88% were intentional ingestions. The majority of the cases were from the predominantly rural province of KwaZulu Natal (44.9%). CNS depression was the most common clinical sign (76.8%) followed by bradycardia 34.8%, respiratory depression 27.5%, miosis 27.5%, and hypotension 23.1%. Mechanical ventilation was required in 15.9% of cases. Other commonly reported clinical signs were hypothermia 15.9%, mydriasis 10.1%, and hyperglycaemia 7.2%. Supportive and symptomatic care was shown to be adequate treatment. Amitraz poisoning was misdiagnosed as cholinesterase inhibitor poisoning in 17.4% of cases; **CONCLUSION:** This is the first report of amitraz poisoning in humans in Africa. The data suggest a different demographic pattern in South Africa to that currently reported in the literature. The study identified a very high incidence of intentional poisoning in adults. The misuse of amitraz for deliberate self-harm emphasizes the necessity for continued toxicovigilance.

Veale, D. J., C. A. Wium, et al. (2013). "Toxicovigilance. I: A survey of acute poisonings in South Africa based on Tygerberg Poison Information Centre data." *S Afr Med J* **103**(5): 293-297.

**BACKGROUND:** The incidence and spectrum of acute poisonings in South Africa are unknown. Poisoning data can be derived from sources such as hospital admission records and poison information centre (PIC) records. **OBJECTIVES:** This study was conducted to examine the extent of the problem and to identify trends and toxicovigilance issues using PIC data. **METHODS:** A survey was conducted based on Tygerberg Poison Information Centre (TPIC) consultations over 1 year. TPIC consultation forms were analysed for patient demographics and causes of poisoning. **RESULTS:** The TPIC dealt with 4 771 consultations related to human exposures to poisonous substances. The study showed that accidental exposure was more common than intentional poisoning (65.2% v. 34.8%); that 55.8% of cases were adults, of which 57.6% were females; and that 61.4% of adult cases were intentional exposures, and of these 64.3% were females. There was a predominance of accidental exposures (98.8%) and a male predominance (59.7%) in children. Categories of poisoning exposures across all age groups were non-drug chemicals (52.7%), medicines (35.2%)

and biological toxins (12.6%). Pesticides (34.8%), irritant/corrosive substances (27.7%) and volatile hydrocarbons (8.3%) were the most common classes of non-drug chemical exposures. Cholinesterase inhibitors (8.8%), anticoagulant rodenticides (7.1%) and pyrethroids (5.0%) were the most commonly ingested non-drug chemicals. Aldicarb and amitraz poisoning were identified as toxicovigilance targets. Analgesics (26.1%) were the most common class of medicine-related exposure, and paracetamol (15.8%), benzodiazepines (9.2%) and antihistamines (5.2%) were the most common medicine-related exposures. CONCLUSION: The study provided information on evolving trends and identified toxicovigilance targets and the need for continuing toxicology education programmes.