

ORIGINAL ARTICLE

# Prevalent Poisonings in Adults and Adolescents in Dubai: A Compendium from Rashid Hospital

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## Abstract

**Background:** Profile of acute poisonings varies from country to country depending on the ease of availability of substances and socio-economic condition of people; however, very little information from the United Arab Emirates (UAE) has been published, so far. This study was designed to find out the most common causes of overdose and poisoning in patients admitted to the emergency department of Rashid Hospital (RH), Dubai, UAE.

**Methods:** In this retrospective cross sectional study, medical records of poisoned patients admitted to RH from 1<sup>st</sup> January 2012 to 31<sup>st</sup> December 2012 were reviewed. Demographic data, types of substances used, intention, length of hospital stay and outcomes were recorded in pre-designed checklists.

**Results:** Overall, 163 patients were studied that among them gender distribution was relatively equal (male: female = 1.04: 1). Mean age of patients was  $30.3 \pm 11.5$  and most patients were in the age group of 20 to 29 years age old (41.7%). Regarding the type of poisons, the majority of patients were poisoned with pharmaceuticals (55.8%) followed by chemical substances (23.3%). In pharmaceutical poisonings, most cases were due to multi-drug ingestion (22.6%), followed by ingestion of paracetamol (14.1%) and benzodiazepines (4.3%). Considering the gender distribution, women were significantly more involved with pharmaceutical poisoning ( $P = 0.046$ ), while venomous envenomation occurred only in men indicating a significant difference ( $P = 0.004$ ). In chemical poisoning, most cases were due to ingestion of corrosive agents (19%). Suicidal poisoning was significantly more common in women ( $P < 0.001$ ), while drug abuse was significantly more common in men ( $P < 0.001$ ). Length of hospital stay averaged on 8.1 days. Only 3 patients died during the admission (mortality rate: 1.8%).

**Conclusion:** Study on, training for and prevention of poisoning should receive more attention in the UAE. Over-the-counter drugs especially paracetamol should be prescribed in a more controlled manner.

**Keywords:** Drug Overdose; Epidemiologic Studies; Hospital Emergency Service; Poisoning; United Arab Emirates

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## INTRODUCTION

Acute poisoning is the reason for hospitalization for a major portion of patients admitted to emergency departments worldwide (1-4). It ranks 40<sup>th</sup> among 176 leading causes of years of life lost in the Middle East region (5). Deliberate self-poisoning has been identified as one the main methods of suicidal attempts in the United Arab Emirates (UAE) and especially in the city of Dubai (6). Profile of acute poisonings varies from country to country depending on the ease of availability of substances and socio-economic condition of people (1-4). Poisoning and toxic ingestions are common cases seen in the emergency department; yet, very little information from the UAE has been published. Due to the multi-cultural society in Dubai, various ethnicities and different age-groups are involved with poisonings (7); nevertheless, detailed information has not been available. Only a handful of studies on poisonings have been carried out in the UAE, which most of them were

related to pediatric age group or were generalized surveys (7-9). A clear profile of commonly used toxic agents, ethnical backgrounds and outcome of poisoned patients is necessary in each country. In addition, for development of regional or national poison policies, providing a detailed epidemiologic information on different types of poisonings is essential. In this study, we aimed to study the profile of acute poisonings and overdoses in Dubai, derived from the archives of emergency department of Rashid Hospital (RH).

## METHODS

Dubai is a tourism, trade and logistics hub and it is a home to over 2 million people from 200 nationalities. RH is a premier 680-bed medical facility located in Dubai that provides high-quality medical services and admits the majority of complicated case referrals from many other hospitals. RH is the main tertiary hospital in Dubai receptive to medical emergency cases. A 68-bed emergency department within this hospital serves specialized healthcare

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to the population of Dubai and Northern UAE for all medical and surgical emergencies including trauma, critical care, poisonings, etc. RH is the referral hospital for adolescent and adult poisoned patients in Dubai, and so by interpreting the RH data we believe that the profile of adolescent and adult poisonings in Dubai can be reflected.

In this retrospective cross sectional study, medical records of poisoned patients admitted to RH from 1<sup>st</sup> January 2012 to 31<sup>st</sup> December 2012 were reviewed. Using the International Classification of Diseases version 10 (T36.0 to T65.9), the diagnosis of overdose and poisoning was established. Exclusion criteria were patients under 13 years of age, those who left the hospital against medical advice and those with incomplete data in their records.

Data including demographic features of patients, type of toxic agent used, intention of poisoning, length of hospital stay and outcome were collected in predesigned checklists. The collected data were analyzed using Microsoft Excel software (Microsoft Corp., Redmond, WA, USA) and Statistical Package for Social Sciences (SPSS Inc., Chicago, USA). The chi-square test was used to assess differences in the frequency of poisons used and intention of poisoning between genders. P values less than 0.05 were considered statistically significant.

## RESULTS

### Sociodemographic features

Overall, 163 patients were studied that among them, gender distribution was relatively equal (male: female = 1.04: 1). Mean age of patients was 30.3 ± 11.5 and most patients were in the age group of 20 to 29 years age old (41.7%), followed by the patients in the 30 to 39 year-old age group (23.9%). The majority of patients were native Emirati

Variable	No. (%)
<b>Gender</b>	
Male	83 (50.9)
Female	80 (49.1)
<b>Age groups</b>	
14-19	23 (14.1)
20-29	68 (41.7)
30-39	39 (23.9)
40-49	23 (14.1)
50-59	6 (3.7)
60-69	2 (1.2)
70-79	2 (1.2)
<b>Nationality</b>	
Native Emirati	39 (23.9)
Indian	34 (20.9)
Bangladeshi	10 (6.1)
Sri Lankan	10 (6.1)
Pakistani	7 (4.3)
Others	63 (38.7)

(23.9%) closely followed by Indians (20.9%) (Table 1).

### Types of poisoning

Regarding the types of poisoning, the majority of patients were poisoned with pharmaceuticals (55.8%) followed by chemical substances (23.3%) (Table 2). In pharmaceutical poisonings, most cases were due to multi-drug ingestion (22.6%), followed by ingestion of paracetamol (14.1%) and benzodiazepines (4.3%). Most common drugs used in multi-drug ingestions were paracetamol (13 of 37, 35.1%), anti-convulsants (32.4%), benzodiazepines (27.0%) and antimicrobials (24.3%).

Considering the gender distribution, women were significantly more involved with pharmaceutical poisoning (P = 0.046), while venomous envenomation occurred only in men indicating a significant difference (P = 0.004). In 12.3% of cases, the type of toxic agent could not be identified, which was significantly more frequent for male patients (P = 0.021). In chemical poisoning, most cases were due to ingestion of corrosive agents (19%).

### Circumstances of poisoning

In pharmaceutical poisonings, single drug ingestions were more common compared to multi-drug ingestions (n = 54 vs. 37). Suicide was the most common intention of poisoning (54.6%) followed by accidental ingestions (19.0%) (Figure 1). Considering the gender distribution, suicidal poisoning was significantly more common in women (P < 0.001), while drug abuse was significantly more common in men (P < 0.001). Accidental poisoning was also more common in men, though the difference was not statistically significant (P = 0.092) (Table3).

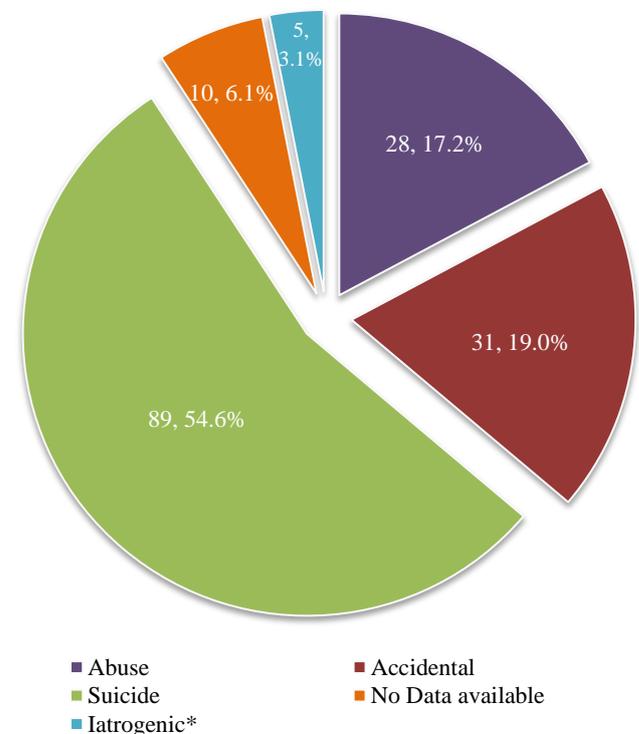


Figure 1. Intention of poisoning (no. = 163)

\* Iatrogenic: adverse effects of standard dose of medications

**Table 2.** Types of poisoning

	Total	Male (no. = 83)	Female (no. = 80)	P value
Pharmaceutical poisoning, no. (%)	91 (55.8)	40 (48.2)	51 (63.8)	0.046**
Paracetamol	23 (14.1)	4 (4.8)	19 (23.8)	
Benzodiazepines	7 (4.3)	4 (4.8)	3 (3.8)	
NSAIDs	5 (3.1)	1 (1.2)	4 (5.0)	
Antimicrobials	4 (2.5)	4 (4.8)	0 (0.0)	
TCAs	4 (2.5)	1 (1.2)	3 (3.8)	
Warfarin	3 (1.8)	1 (1.2)	2 (2.5)	
Anticonvulsants	2 (1.2)	1 (1.2)	1 (1.3)	
Anti-diabetics	2 (1.2)	0 (0.0)	2 (2.5)	
Antipsychotics	1 (0.6)	1 (1.2)	0 (0.0)	
Antihistamine	1 (0.6)	0 (0.0)	1 (1.3)	
Antidepressants/Mood stabilizer	1 (0.6)	0 (0.0)	1 (1.3)	
Antiparkinsons	1 (0.6)	1 (1.2)	0 (0.0)	
Multidrug*	37 (22.6)	22 (26.5)	15 (18.8)	
Illicit drugs, no. (%)	4 (2.5)	3 (3.6)	1 (1.3)	0.324***
Opioids	2 (1.2)	1 (1.2)	1 (1.3)	
Tramadol	2 (1.2)	2 (2.4)	0 (0.0)	
Chemical poisoning, no. (%)	38 (23.3)	16 (19.3)	22 (27.5)	0.215**
Sodium hypochlorite (Clorox)	16 (9.8)	3 (3.6)	13 (16.3)	
Chloroxylenol (Dettol)	4 (2.5)	0 (0.0)	4 (5.0)	
Other corrosive agents (acid/alkali)	11 (6.7)	8 (9.6)	3 (3.8)	
Organophosphate compounds	6 (3.7)	5 (6.0)	1 (1.3)	
CO poisoning	1 (0.6)	0 (0.0)	1 (1.3)	
Venomous bites and sting, no. (%)	8 (4.9)	8 (9.6)	0 (0.0)	0.004***
Snakebite	7 (4.3)	7 (8.4)	0 (0.0)	
Scorpion sting	1 (0.6)	1 (1.2)	0 (0.0)	
Herbal poisoning, no. (%)	2 (1.2)	1 (1.2)	1 (1.3)	0.742***
Unknown, no. (%)	20 (12.3)	15 (18.1)	5 (6.3)	0.021**

\* Ingestion of more than one type of drug

\*\* Calculated by chi square test

\*\*\* Calculated by Fisher's exact test

### Outcomes

Most patients survived (98.2%) and were discharged in less than 5 days (76.6%). The average length of hospital stay was 8.1 days. Only three patients died during the admission (mortality rate: 1.8%), including a 55-year-old man who ingested an acid, a 23-year-old woman who ingested an alkali (clorox) and a 39-year-old man who ingested various medications.

### DISCUSSION

Rising incidence of poisoning has drawn attention of healthcare authorities worldwide (10). In the UAE, limited number of studies have focused on the problem of poisoning in the country. In the present study, we aimed to provide an epidemiologic picture of poisonings in adolescents and adults in Dubai. It was found that paracetamol was the most common drug ingested for poisoning. This can be due

to low cost of the drug and its easy availability as it is an over-the-counter (OTC) medication in the country. Studies done by Kara et al. in Turkey, Prajapati et al. in western India and Sarkar et al. in northern Bangladesh similarly showed that paracetamol was one of the main drugs taken by the poisoned patients (3,10,11). Nevertheless, the rate of paracetamol poisoning in the present study was comparatively higher. OTC drugs are common subjects to medication diversion (12). Physicians should thus be careful on the amount of a drug prescribed to each patient. In addition, for patients in Dubai with multi-drug or unknown ingestions, assessment of blood paracetamol level should be considered to rule out this major cause of overdose.

In the present study, illicit drug abuse was reported in 2.4% of patients which is lower than the statistics of other countries in the region (2,13). Contrary to countries in Southeast Asia, especially Bangladesh and India (4,10,11),

**Table 3.** Analysis of intention of poisoning according to gender

	Gender		P value
	Male (no.: 83)	Female (no.: 80)	
Suicide, no. (%)	31 (37.3)	58 (72.5)	< 0.001*
Accidental, no. (%)	20 (24.1)	11 (13.8)	0.092*
Abuse, no. (%)	23 (27.7)	5 (6.3)	< 0.001*
Iatrogenic, no. (%)	2 (2.4)	3 (3.8)	0.483**
No information available, no. (%)	7 (8.4)	3 (3.8)	0.180**

\* Calculated by chi square test

\*\* Calculated by Fisher's exact test

a very low rate of organophosphate (OP) poisoning was seen in our study. This can be due to strict control for sale of such compounds by the Ministry of Environment and Water. Although there have been reports of using illegal pesticides in the local newspapers, these agents were less likely to be used for poisoning in our country.

Multi-drug ingestion constituted a major proportion of our patients (22.6%). In south India the rate of multi-drug ingestions is reported to be 18%. This type of poisoning is more common among adults who have more access to various drugs, whereas in children this figure is markedly lower (2.8%) (15). In this study, two patients died from complications of corrosive agent ingestion, one from gastric outlet obstruction and the other one from gastrointestinal perforation. Better precautions regarding storage of household cleaning products and public education should be considered.

The major proportion of patients in this study was in the 2<sup>nd</sup> and 3<sup>rd</sup> decades of their life. This resembles the statistics of other countries (2-4,10,13,15), showing that individuals in this age-group are more vulnerable to poisoning and high risk behaviors (16).

Suicidal ingestion was significantly more common among women in the present study which resembles a recent study done in India and a study done in Norway (4,17). The gender preference that exists for suicidal poisonings implies familial disharmony that drives women to escape from their problems or attract the attention of the other side by committing suicide (11,17). In addition, we found venomous snake and scorpion envenomation was more commonly occurred in men, a finding that confirms studies done in other parts of the world (18-20). This is because venomous bites and stings are generally threats to outdoor activities, and thus more commonly involve men that are more likely to work outdoors (19,20).

### LIMITATIONS

In RH hospital an electronic registry for poisonings was not available, and thus all data were manually extracted by the investigators. Therefore, some cases might be missed. Pediatric services are not available in RH and unfortunately data of poisoning in children, could not be evaluated in this study. Some medical records had incomplete details. Since the collection of data was done for only a 1-year period, the

study may not depict the exact situation of poisoning in the UAE and especially in Dubai. Therefore, conducting further studies with a larger number of patients in future seems necessary.

### CONCLUSION

Study on, training for and prevention of poisoning should receive more attention in the UAE. A country-wide registry is needed for better monitoring, evaluating and policy making for poisoning in the UAE. OTC drugs especially paracetamol should be prescribed in a more controlled manner.

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### REFERENCES

- Lund C, Teige B, Drottning P, Stiksrud B, Rui TO, Lyngra M, et al. A one-year observational study of all hospitalized and fatal acute poisonings in Oslo: epidemiology, intention and follow-up. *BMC Public Health* 2012;12:858.
- Afshari R, Majdzadeh R, Balali-Mood M. Pattern of acute poisonings in Mashhad, Iran 1993-2000. *J Toxicol Clin Toxicol* 2004;42:965-75.
- Kara H, Bayir A, Degirmenci S, Kayis SA, Akinci M, Ak A, et al. Causes of poisoning in patients evaluated in a hospital emergency department in Konya, Turkey. *J Pak Med Assoc* 2014;64:1042-8.
- Patil A, Peddawad R, Verma VCS, Gandhi H. Profile of Acute Poisoning Cases Treated in a Tertiary Care Hospital: a Study in Navi Mumbai. *Asia Pac J Med Toxicol* 2014;3:36-40.
- Lozano R, Naghavi M, Foreman K, Lim S, Shibuya K, Aboyans V, et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012;380:2095-128.
- Koronfel AA. Suicide in Dubai, United Arab Emirates. *J Clin Forensic Med* 2002;9:5-11.
- Terris J. Profile of Poisonings in Dubai. Abstract presented at the 4th Mediterranean Emergency Medicine Congress; 2007 Sep 15-19; Sorrento, Italy.
- Bharwani S, Hashim MJ, Raheel H, Rahim M, Sharif Y. Role

- of a poison center in reducing unintentional childhood ingestion by targeting pre-event risk factors. *Pediatr Emerg Care* 2013;29:296-300.
9. Sharif Y, El Ghandour S, Safarini M. Household Products Survey - HAAD Poison and Drug Information Center. *Middle East J Fam Med* 2010;8:20-5.
  10. Prajapati T, Prajapati K, Tandon R, Merchant S. Acute Chemical and Pharmaceutical Poisoning cases Treated in Civil Hospital, Ahmedabad: One Year study. *Asia Pac J Med Toxicol* 2013;2:63-7.
  11. Sarkar D, Shaheduzzaman M, Hossain MI, Ahmed M, Mohammad N, Basher A. Spectrum of Acute Pharmaceutical and Chemical Poisoning in Northern Bangladesh. *Asia Pac J Med Toxicol* 2013;2:2-5.
  12. Afshari R. Non-medical Use of Medications in Middle and Low Income Countries. *Asia Pac J Med Toxicol* 2014;3:49.
  13. Patel MJ, Shahid M, Riaz M, Kashif W, Ayaz SI, Khan MS, et al. Drug overdose: a wake up call! Experience at a tertiary care centre in Karachi, Pakistan. *J Pak Med Assoc* 2008;58:298-301.
  14. Asghar A, Anees M, Mahmood KT. Accidental Poisoning In Children. *J Biomed Sci Res* 2010;2:284-9.
  15. Jesslin J, Adepu R, Churi S. Assessment of prevalence and mortality incidences due to poisoning in a South Indian tertiary care teaching hospital. *Indian J Pharm Sci* 2010;72:587-91.
  16. Mostafazadeh B, Farzaneh E. Risks and Risk Factors of Repeated Suicidal Attempt: Study on Unconscious Poisoned Patients. *Asia Pac J Med Toxicol* 2013;2:28-31.
  17. Hovda KE, Bjornaas MA, Skog K, Opdahl A, Drottning P, Ekeberg O, et al. Acute poisonings treated in hospitals in Oslo: a one-year prospective study (I): pattern of poisoning. *Clin Toxicol (Phila)* 2008;46:35-41.
  18. Dadpour B, Shafahi A, Monzavi SM, Zavar A, Afshari R, Khoshdel AR. Snakebite Prognostic Factors: Leading Factors of Weak Therapeutic Response Following Snakebite Envenomation. *Asia Pac J Med Toxicol* 2012;1:27-33.
  19. Mondal RN, Chowdhury FR, Rani M, Mohammad N, Islam MM, Haque MA, et al. Pre-Hospital and Hospital Management Practices and Circumstances behind Venomous Snakebite in Northwestern Part of Bangladesh. *Asia Pac J Med Toxicol* 2012;1:18-21.
  20. Sarmin S, Amin MR, Al-Mamun H, Rahman R, Faiz MA. Clinical Aspects of Green Pit Viper Bites in Bangladesh: A Study on 40 Patients. *Asia Pac J Med Toxicol* 2013;2:96-100.