

Pattern of Acute Poisoning among Patients Admitted to Tanta Poison Control Center during 2012

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Abstract

Background: Acute poisoning remains a major public health problem and represents a frequent cause of admission in emergency units, especially in developing countries. Many studies must be focused on the different patterns of acute poisoning in patients admitted to poison control centers. So, the aim of this study is to characterize the poisoning cases admitted to poison control center, Tanta University Emergency Hospital, Egypt.

Study design: All admitted acutely poisoned patients from January to December 2012 were evaluated retrospectively. Data of socio-demographic characteristics, time of admission, circumstances of poisoning, agents, route of exposure and mortality rate were collected from medical records of the hospital. During this period, 1104 patients were admitted.

Results: Of the admitted patients, 57.1% were females and 42.9% were males. The majority (31.2%) of cases were in the age group between 1-10 years. Most poisonings were accidental (55.2%) while suicidal attempts were 44.8%. Females were 76.2% of all suicidal poisoning while males were 58.5% of all accidental poisoning. The most important agents used were therapeutic drugs (32.3%) especially sedatives and hypnotics (12.6%) followed by analgesics (9.24%) and CVS drugs (8.96%). Pesticides were the second common agents used (28.6%) of which organophosphates were the commonest (67.7%). Mortality rate was 0.5% which was due to suicidal attempts by pesticides.

Conclusion: The study concluded that high rate of acute poisoning was between patients of age group between 1-10 years. Females were of high suicidal attempts than males, while males were predominant in accidental poisoning. The most commonly substances included are drugs and pesticides. Prevention strategies should be directed towards limiting access to the implicated substances involved in both accidental and suicidal poisoning.

Introduction

Acute poisoning is exposure to a poison on one occasion or during a short period of time. Symptoms develop in close relation to the exposure. Poison can be defined as any substance that causes a harmful effect when administered, either by accident or design, to a living organism. Poison is a quantitative concept, almost any substance can be harmful at some doses but, at the same time, being without harmful effect at some lower dose (Hodgson, 2004).

Acute poisoning is still an important public health problem and represents a frequent cause of admission in emergency units, especially in developing countries (Sahin et al., 2011).

Annually, more than 2 million cases of poison exposure are reported to poison centers in the United States (Watson et al., 2004). It is estimated that some forms of poisons are directly or indirectly responsible for more than 1 million illnesses worldwide annually (Pillay, 2004). The exact number of incidences can be

higher, because most cases of the poisoning actually go unreported.

According to the 2004 World Health Report, it is estimated that 350,000 people died from unintentional poisoning worldwide in 2002; half of them in Southeast Asia and Western Pacific region (Yang, 2010).

Acute poisoning may be due to drugs, chemical substances, animal venom or plant toxins. The problem is getting worse with time as newer drugs and chemicals are developing. Poisoning cases are increasing day-by-day due to changes in the life style and social behavior. The causes of poisoning can be civilian, industrial, accidental, and deliberate or suicidal (Shadnia et al., 2007).

The mortality rate due to poisoning is 3–5% (Agarwal and Gupta 1984; Buch et al., 1991 and Mutlu et al., 2010). The pattern and main risks of acute poisoning change with time according to age, and they differ from country to country. Thus epidemiological

surveillance specific for each country is necessary to determine the extent and characteristics of the problem, according to which related preventive measures can be taken (Sahin et al.,2011).

Tanta poison control center is the only available, well-equipped and qualified center in El-Gharbia governorate area. It is located in the center of delta Egypt. It provides valuable, informative advice, overdose diagnosis, best possible health care and management of acute poisoning cases to general public living in this area. It serves large population and treats patients referred by other district hospitals. Also, it provides advice and training to medical hospital personnel (i.e., physicians, pharmacists and nurses) and non-medical callers from all over this area.

So, the objective of this study is to assess the patterns of acute poisoning among patients admitted to Tanta poison control center in the year 2012.

Patients and methods

Patients

This retrospective study was conducted on acute poisoned patients admitted to Poison Control Center, Tanta University Emergency Hospital, Egypt. Data were collected from records and documentation forms of all admitted acutely poisoned patients during the study period from January to December 2012.

Patients were classified according to age into the following groups:

- Group 1: 1- 10 years
- Group 2: 11-20 years
- Group 3: 21-30 years
- Group 4: 31-40 years
- Group 5: 41-50 years
- Group 6: 51-60 years
- Group 7: more than 60 years

Methods

Toxicological sheets were reviewed for the following items:

- Personal history: age, sex, residence, admission date and circumstances of poisoning .
- Toxicological history: identification of substances (poisons and/or drugs) used and its route of administration.

- Past history: psychiatric illness and drug abuse.

Accidents included external causes of poisoning and self inflicted accidents (e.g. taking the wrong medication where the agent was not used for self-harm or intoxication purposes. Poisonings due to substance abuse, such as heroin, tramadol, hashish and ethanol taken for intoxication purposes, were defined as accidental overdoses with substances of abuse. Data of reports were transferred into a basic data sheet and evaluated statistically.

Ethics approval for the study was obtained from the Research Ethics and Publications Committee of the Faculty of Medicine, Tanta University, Egypt. Approval of the head of the Poison Control Center was taken. Confidentiality of records was maintained by keeping the records anonymous.

Statistical analysis

Data were entered into SPSS statistical program version 17, Chicago IL. Descriptive statistics were used to describe the sample and p-values less than or equal to 0.05 were considered to be statistically significant. The statistical test for comparison used was the Chi-square test.

Results

This study included 1104 patients admitted to poison control center, Tanta University Emergency Hospital, Egypt in the year 2012. The age of the patients included in this study ranged between 1 to 75 years.

In this study, acute poisoning was prevalent in the age group between 1-10 years (344 patients, 31.2%), followed by age group between 11- 20 years (303 patients, 27.4%) while the least cases were among age group of more than 60 years (10 patients, 0.9%) (Table 1).

Acutely poisoned females were 630 (57.1%) of total number of patients while male patients with toxic exposure were 474 (42.9%). (Table1, Figure1).

As regard the circumstances of poisoning, this study revealed that acute poisoning was either accidental or attempted suicide. Accidental poisoning occurred in 609 (55.2%) while suicidal poisoning occurred in 495(44.8%) (Table1, Figure2).

Females (n=377, 76.2%) predominated males (n=118, 23.8%) in suicidal attempts while the reverse occurred in accidental poisoning as males were 356 (58.5%) and females were 253 (41.5%) (Table 2).

The distribution of different age groups, gender according to circumstances of poisoning was done. This revealed that suicidal poisoning among females in the age group between 11- 20 years was the commonest (n=206, 86.2% of this age group) followed by age group between 21- 30 years (n=136, 69% of this age group), while the age group of more than 60 years was the least (n=1, 100% of this age group). Suicidal attempts in male patients were more prevalent in the age group between 21- 30 years (n=61, 31% of this age group). As regard accidental poisoning, the commonest cases were among males in the age group between 1-10

years (58.2%) and females were 41.8% of this age group. While the least was among patients more than 60 years, males and females (77.8% and 22.2% of this age group respectively) (Table 3)

Table (1) revealed that patients with a history of psychological disturbances constituted 12 of all patients (1.1%), while patients with a history of drug abuse were 23 of all cases (2.1%).

The current study revealed that acute poisoning was more prevalent in rural areas (598, 54.2%) than in urban areas (506, 45.8%) (Table 1, Figure 3).

More than 80% of the studied patients (n= 908) were exposed through oral route compared to 87 (7.9%), 82(7.4%), 12(1.1%), 8(0.7%) and 7(0.6%) patients through inhalation, bite, inhalation plus dermal, injection and dermal respectively. Only one case of suicidal attempts was through injection (0.2%) while the rest of cases was by oral route (n=494, 99.8%) while in accidental poisonings all different routes were included (Table 4).

The common agents involved in the poisoning were drugs (n=357, 32.3%) followed by pesticides (n=316, 28.6%), while the least agents used were hashish (n=4, 0.4%) and heroin (n=2, 0.2%). It was observed that therapeutic drugs are the predominant among agents used for suicidal attempts (n=247, 49.9% of all suicides), while pesticides are the most prevalent among accidental poisoned patients (n=125, 20.7% of all accidental poisonings). There were some agents involved absolutely accidentally as bites (n= 82, 13.3%), food poisoning (n=27, 4.4%), chlorine gas (n= 24, 3.9%), carbon monoxide (n=16, 2.6%), hashish (n= 4, 0.7%) and heroin (n=2, 0.3%) of all accidental poisonings (table 5).

In the current study, there was a significant difference between accidental and suicidal poisoning

with benzene (p=0.005). 1.4% of patients were poisoned with miscellaneous substances such as cosmetics, akim's body oil, naphthalene and various stings. A significant percentage (5%) of poisoned patients both accidentally and suicidal was through use of a mixture of unknown substances (Table 5).

Among the various types of drugs used by patients in this study, sedatives and hypnotics were the commonest used (n= 45, 12.6%), followed by analgesics (n= 33, 9.24%) then CVS drugs (n= 32, 8.96%) (table 6).

The most common drugs used for suicidal attempts were sedatives and hypnotics (n= 33,11,45%) followed by analgesics and theophylline (each of n= 27, 9.37%), while the most drugs accidentally used were sedatives and hypnotics (n= 12, 17.39%) followed by antipsychotics and CVS drugs (each of n= 8, 11.59%) (Table 6)

Among pesticides, most poisonings were caused by organophosphates (n= 214, 67.7%) followed by zinc phosphide (n=54, 17.1%) then carbamates (n=27, 8.5%) and lastly, aluminium phosphide (n=11, 3.5%) and pyrethroids (n= 10, 3.2%) (table 7).

As regard gender and its correlation to the type of poisoning, it was found that the most used for males was pesticides (n=134, 42.4%), while therapeutic drugs were the most used type for females (n= 253, 70.9%) (table 8)

Pesticides were more common agents involved in rural areas than urban areas (60.8% and 39.2% respectively), while therapeutic drugs were more common agents involved in urban than rural areas (50.7% and 49.3% respectively) (Table 9).

Finally, mortality rate in this study was 0.5% of all cases. All the five cases (2males and 3females) were suicidal by pesticides.

Table (1): Percentage of general characteristics of the studied patients (Number=1104).

		N	%
Sex	Male	474	42.9
	Female	630	57.1
Age	1- 10 years	344	31.2
	11-20 years	303	27.4
	21-30 years	285	25.8
	31-40 years	84	7.6
	41-50 years	41	3.7
	51-60 years	37	3.4
	> 60years	10	.9
Residence	Rural	598	54.2
	Urban	506	45.8
Psychological Disturbance	Yes	12	1.1
	No	1092	98.9
Drug Abuse	Yes	23	2.1
	No	1081	97.9
Manner Of Toxicity	Suicidal	495	44.8
	Accidental	609	55.2

N= number

Table (2): Chi square statistical analysis of studied patients according to circumstances of poisoning gender.

Sex	Manner of toxicity				Total		p. value
	Suicidal		Accidental		N	%	
	N	%	N	%			
Male	118	23.8	356	58.5	474	42.9	0.001
Female	377	76.2	253	41.5	630	57.1	0.001
Total	495	100	609	100	1104	100	-

Significant $p < 0.05$, N= number

Table (3): Chi square statistical analysis of studied patients according to age groups, gender and circumstances of poisoning.

Age	Sex	Manner of toxicity						p.value
		Suicidal		Accidental		Total		
		N	%	N	%	N	%	
1-10 years	Male	4	57.1	196	58.2	200	58.1	0.622
	Female	3	42.9	141	41.8	144	41.9	
	Total	7	100	337	100	344	100	
11-20 years	Male	33	13.8	37	57.8	70	23.1	0.001
	Female	206	86.2	27	42.2	233	76.9	
	Total	239	100	64	100	303	100	
21-30 years	Male	61	31	52	59.1	113	39.6	0.001
	Female	136	69	36	40.9	172	60.4	
	Total	197	100	88	100	285	100	
31-40 years	Male	13	38.2	29	58	42	50	0.060
	Female	21	61.8	21	42	42	50	
	Total	34	100	50	100	84	100	
41-50 years	Male	5	38.5	17	60.7	22	53.7	0.160
	Female	8	61.5	11	39.3	19	46.3	
	Total	13	100	28	100	41	100	
51-60 years	Male	2	50	18	54.5	20	54.1	0.630
	Female	2	50	15	45.5	17	45.9	
	Total	4	100	33	100	37	100	
> 60years	Male	0	0	7	77.8	7	70	0.330
	Female	1	100	2	22.2	3	30	
	Total	1	100	9	100	10	100	

Significant $p < 0.05$, N= number

Table (4): Chi square statistical analysis of studied patients according to circumstances of poisoning and route of exposure.

Route	Manner of toxicity				Total		p. value
	Suicidal		Accidental		N	%	
	N	%	N	%			
Oral	494	99.8	414	67.9	908	82.2	0.006
Inhalation	0	0	87	14.3	87	7.9	-
Bite	0	0	82	13.5	82	7.4	-
Dermal+ inhalation	0	0	12	1.9	12	1.1	-
Injection	1	0.2	7	1.14	8	0.7	0.005
Dermal	0	0	7	1.14	7	0.6	-
Total	495	100	609	100	1104	100	-

Significant $p < 0.05$, N= number

Table (5): Chi square statistical analysis of studied patients according to types of poisons and circumstances of poisoning.

	Manner of toxicity				Total		p. value
	Suicidal		accidental		N	%	
	N	%	N	%			
Therapeutic drugs	247	49.9	110	18.1	357	32.3	0.030
Pesticides	191	38.4	125	20.7	316	28.6	0.018
Corrosives	5	1	96	15.8	101	9.1	0.001
Bites	0	0	82	13.3	82	7.4	0.001
Tramadol	18	3.6	31	5.1	49	4.4	0.093
Alcohols	1	0.2	6	1	7	0.6	0.006
Hashish	0	0	4	0.7	4	0.4	-
Heroin	0	0	2	0.3	2	0.2	-
Kerosene	4	0.8	32	5.3	36	3.3	0.001
Benzene	2	0.4	11	1.8	13	1.2	0.005
Chlorine gas	0	0	24	3.9	24	2.2	-
Carbon monoxide	0	0	16	2.6	16	1.4	-
Food poisoning	0	0	27	4.4	27	2.4	-
Miscellaneous	2	0.4	13	2.1	15	1.4	0.010
Unknown	25	5.1	30	4.9	55	5	0.635
Total	495	100	609	100	1104	100	-

Significant $p < 0.05$, N= number

Table (6): Chi square statistical analysis of the studied patients according to types of therapeutic drugs (Number=357) and circumstances of poisoning.

	Manner of toxicity				Total		p. value
	Suicidal		Accidental		N	%	
	N	%	N	%			
Sedatives & hypnotice	33	11.45	12	17.39	45	12.60	0.035
Analgesics	27	9.37	6	8.69	33	9.24	0.635
CVS drugs	24	8.33	8	11.59	32	8.96	0.665
Anti-psychotics	22	7.63	8	11.59	30	8.40	0.124
Anticonvulsants	24	8.33	6	8.69	30	8.40	0.586
Theophylline	27	9.37	2	2.89	29	8.12	0.030
Anti-inflammatoy	23	7.98	3	4.34	26	7.28	0.447
GIT durgs	19	6.59	5	7.24	24	6.72	0.625
Anti-depressants	18	6.2	5	7.24	23	6.44	0.635
Anti-histamines	17	5.90	4	5.79	21	5.88	0.526
Tonics	16	5.55	2	2.89	18	5.04	0.017
Antibiotics	15	5.20	0	0	15	4.20	-
Hypoglycemics	8	2.77	4	5.79	12	3.36	0.024
Others	15	5.20	4	5.79	19	5.32	0.852
Total	288	100	69	100	357	100	-

Significant $p < 0.05$, N= number

Table (7): Percentage of studied patients according to different types of pesticides (Number=316).

Type of pesticide	N	%
Organophosphates	214	67.7
Zinc phosphide	54	17.1
Carbamates	27	8.5

Aluminium phosphide	11	3.5
Pyrethroids	10	3.2
Total	316	100

Table (8): Chi square statistical analysis of the studied patients according to types of poisons and gender.

	Sex				Total		p. value
	Male		Female		N	%	
	N	%	N	%			
Therapeutic drugs	104	29.1	253	70.9	357	32.33	0.001
Pesticides	134	42.4	182	57.6	316	28.62	0.052
Corrosives	59	58.4	42	41.6	101	9.14	0.035
Bites	51	62.2	31	37.8	82	7.42	0.006
Tramadol	28	57.1	21	42.9	49	4.43	0.052
Alcohols	5	71.4	2	28.6	7	0.63	0.001
Hashish	4	100	0	0	4	0.36	-
Heroin	2	100	0	0	2	0.18	-
Kerosene	18	50	18	50	36	3.26	1
Benzene	9	69.2	4	30.8	13	1.17	0.001
Chlorine gas	8	33.3	16	66.7	24	2.17	0.034
Carbon monoxide	8	50	8	50	16	1.44	1
Food poisoning	10	37.1	17	62.9	27	2.44	0.006
Miscellaneous	7	46.7	8	53.3	15	1.35	0.147
Unknown	27	49.1	28	50.9	55	4.98	0.528
Total	474	42.9	630	57.1	1104	100	0.052

Significant $p < 0.05$, N= number

Table (9): Chi square statistical analysis of the studied patients according to types of poisoning and residence.

	Residence				Total		p. value
	Urban		Rural		N	%	
	N	%	N	%			
Therapeutic drugs	181	50.7	176	49.3	357	32.33	0.458
Pesticides	124	39.2	192	60.8	316	28.62	0.036
Corrosives	36	35.6	65	64.3	101	9.14	0.008
Bites	35	42.7	47	57.3	82	7.42	0.052
Tramadol	35	71.4	14	28.6	49	4.43	0.001
Alcohols	4	57.1	3	42.9	7	0.63	0.052
Hashish	3	75	1	25	4	0.36	0.003
Heroin	1	50	1	50	2	0.18	1
Kerosene	13	36.1	23	63.9	36	3.26	0.019
Benzene	9	69.2	4	30.8	13	1.17	0.003
Chlorine gas	13	54.2	11	45.8	24	2.17	0.059
Carbon monoxide	7	43.8	9	56.3	16	1.44	0.053
Food poisoning	13	48.1	14	51.9	27	2.44	0.524
Miscellaneous	5	33.3	10	66.7	15	1.35	0.002
Unknown	27	49.1	28	50.9	55	4.98	0.458
Total	506	45.8	598	54.2	1104	100	-

Significant $p < 0.05$, N= number

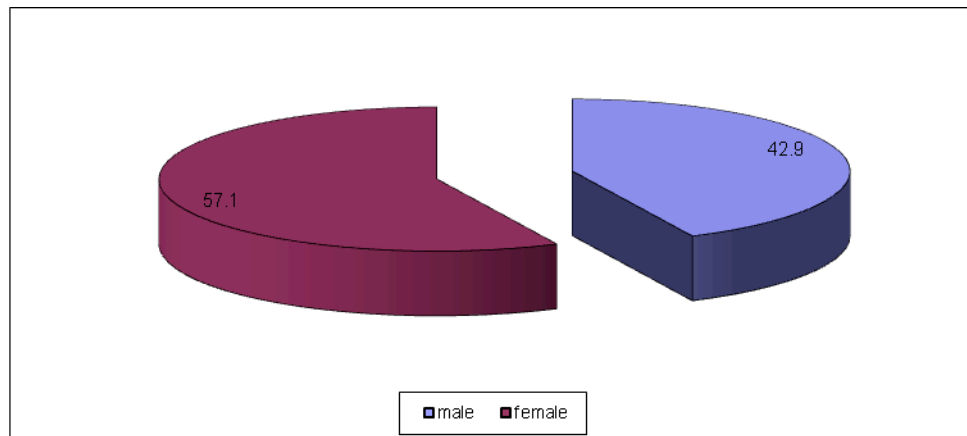


Figure (1): Percentage of studied patients according to gender.

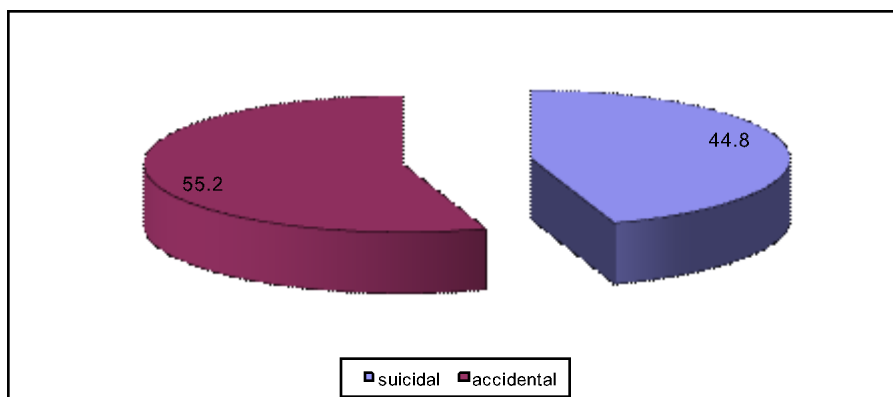


Figure (2): Percentage of studied patients according to circumstances of poisoning.

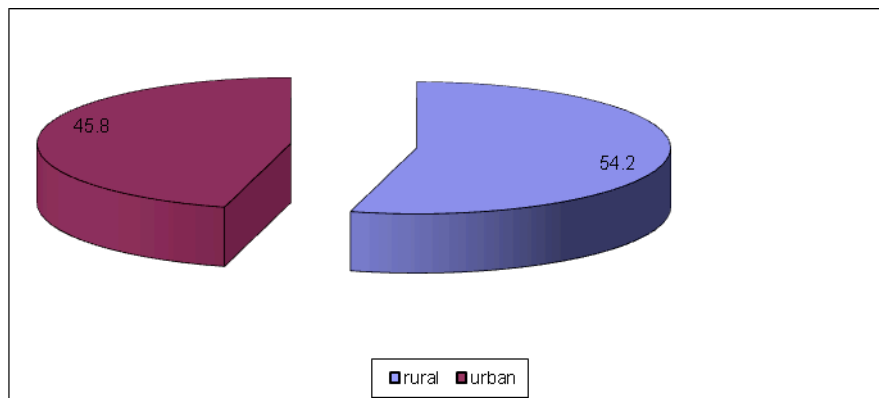


Figure (3): Percentage of studied patients according to residence.

Discussion

Acute poisoning is a common cause of hospital admissions worldwide. The age of patients included in this study ranged from one year to 75 years. Kanchan et al., (2010) found that the age of the victims ranged from 2 to 82 years with a mean age of 38.4 years.

In this study, acute poisoning primarily involved patients in the age group 1- 10 years (31.2%) followed by age group between 11- 20 years (27.4%), while the least was of the age group more than 60 years (0.9%). This was in agreement with Hoffman (2007) who found that the incidence of childhood toxicity ranged from 0.33% to 6%. Poisoning is most commonly observed at 1- 5 years of age and these

children constitute 80% of all poisoning cases (Jacobsen et al., 1984 and Hovda et al., 2008). This could be explained by the fact that child in this age tries to discover the world around him through his mouth.

Other studies observed that acute poisoning was prevalent among younger adult populations, with less than 3% of the cases being in people aged 60 years or older in most of previous studies (Crouch et al., 2004; Rogers & heard, 2007; Cassidy et al., 2008 and Karbakhsh & Zandi, 2008)

Sharma, (2002) found that involvement of a younger population predominantly during the 3rd and

5th decades of life is probably due to the more ambulant nature of younger people.

On the other hand, the results of the current study disagreed with Marahatta et al.,(2009) who found that most poisoning occurred in the age group of above 40 years.

In the current study, 57.1% were females and 42.9% were males. This was in agreement with Yang et al., (1996) and Gülğolu &Kara (2005) who reported that 25.9% of their study patients were males and 74.1% of them were females. On contrary, these results disagreed with results obtained by Singh &Unnikrishnan ((2006) and kanchan et al., (2010) as they found that males were 70.5% and females were 29.5% of their study patients. The high predominance of females in our study may be due to higher rate of psychological stress in young women and their tendency to prefer suicide attempt as a way of salvation.

In the current study, suicidal attempts occurred in 44.8% of patients while accidental poisoning occurred in 55.2%. Al-Barraq and Farahat, (2011) reported that suicidal cases in a teaching hospital in Riyadh. Saudi Arabia were 25%.

This was in agreement with Sawalha et al., (2010) who reported unintentional poisoning in 92% of cases, while the rest were intentional. On the other hand, Akbaba et al.,(2007) found that 87% of poisoning cases in their study were suicidal attempts while only 13% were unintentional.

In the current study, accidental poisoning occurred mainly in the age group between 1-10 years among males (58.2%). Jacobsen et al., (1984) explained that medications given by parents are the main cause of poisoning in the first year of life, while at 2-3 years of age, house cleaning products cause most cases of poisoning and at 3-5 years of age the medications kept in the cupboard or left open are the main causes of poisoning in male children who are naturally in continuous movement.

In the present study, females predominate males in suicidal attempts (76.2% and 23.8% respectively). Among females, suicidal attempts occurred mainly in the age group of 11- 20 years (86.2%), followed by the age group between 21- 30 years (69%), while in males suicidal attempts were mainly among patients between 21- 30 years (31%) followed by age group between 11- 20 years (13.8%). so, it was observed that suicidal attempts in both males and females occurred mainly between 11- 30 years. This could be attributed to many factors such as poverty, financial problems, unemployment, marital conflicts, breakup in the family support system and stress due to exams among the students.

Findings in this study were in agreement with Bossarte et al.,(2009) and Joe et al.,(2009) who found that females were more significantly likely than males to commit suicidal attempts. On the contrary, it is

inconsistent with a previous study of Chinese urban youth which reported absent gender difference (Zhang and Guo, 2003). The significant gender difference could be explained in the light of iron deficiency among women of childbearing age and teenage girls (Li et al., 2007). Decreased brain iron stores may impair the activity of iron-dependent enzymes necessary for synthesis, function, and degradation of serotonin and thus reduced serotonin level which results in impaired inhibition and suicidal or aggressive feelings (Zimmermann & Kohrle, 2002 and Beard and Connor, 2003). Varnik et al., (2008) explained this observed sex difference in intention as males use other more violent and lethal suicide methods to a greater extent.

In this study, it was noticed that 2 patients only out of 12 psychiatric patients were accidentally poisoned while the rest (10 patients) attempted suicide. As regard drug abused, 2 out of 23 patients attempted suicide while the rest were accidentally poisoned by an overdose with the drug abused. So, very few number of psychic patients and drug abusers were reported (1.1% and 2.1% respectively). This could be explained by the concept to deny these conditions due to social barriers or fear of legal responsibility.

In the current study, the most common route of poisoning was the oral, it accounted for 82.2% of patients. This was followed by inhalation (7.9%), bites (7.4%), both inhalation plus dermal (1.1%), injection (0.7%) and lastly dermal (0.6%).

These data were in a line with data obtained by Ayoğlu, et al., (2009). They found that poisons were taken mainly by ingestion (87.8 %), followed by inhalation (11.9 %), then the combined oral and inhalation (0.3 %). In contrast Sawalha, et al., (2010) reported that the route of poisoning in their study was mainly through bites and stings (72.3%) followed by oral route (23.5%) then inhalation (3.4%). This difference may be explained by the geographic nature of the region, and by the difference in the nature of poisons included in their study and the present study (as the route of intake differs according to the nature of poison).

In the present study, it was noticed that the main route for suicidal attempts was the oral route (99.8% of all suicidal attempts) while one case only was by injection with insulin. On the other hand, accidental poisoning was performed by all the available routes with the commonest is the oral one (67.9%) as most cases of accidental were in the age group between 1- 10 years.

Different types of agents were included in this study. The majority was therapeutic drugs (32.3%) followed by pesticides (28.6%) then corrosives (9.1%) while bites constituted (7.4%). Chlorine and carbon monoxide gases were involved in 2.2% and 1.4% of cases respectively. As regard recreational substances included in this study, tramadol was found to be the

commonest of them (4.4%), then alcohol (0.6%), hashish (0.4%) and lastly heroin (0.2%) of all poisoned patients. Food poisoning was 2.4% of cases. Other agents included in this study were kerosene (3.3%) and benzene (1.2%), other miscellaneous agents constituted 1.4%, while mixture of different unknown agents were used in 5% of all cases.

Our findings were partially in accordance with Akbaba, et al., (2007) who reported that the frequency of toxins in their study was as follows: therapeutic drugs in 71.1% of patients, pesticides in 18.9%, caustics in 3.1%, CO in 1.8%, foods in 3.7% and lastly alcohol in 1.45 % of their study patients. Fuller et al., (1989) found that pharmacological agents were the most common cause of poisoning in Western countries. On the other hand, these results disagreed with those of Jaiprakash, et al., (2011) as they found that poisoning with organophosphorous and organochloride compounds was the commonest (included 60% of their study cases) followed by aluminum and zinc phosphide (comprised 22% of cases). Drugs were consumed by the rest of cases (among which phenobarbitone was the commonest).

Therapeutic drugs were the commonest agents used for suicidal attempts (49.9%). This could be explained by the fact that drugs could be easily purchased from pharmacies without prescription. Sedatives and hypnotics were the commonest drugs used both suicidally and accidentally while analgesics and theophylline were the second drugs used for suicidal attempts because of their wide use among the Egyptians. Therapeutic drugs were the commonest used in urban areas, this perhaps due to higher socioeconomic level in urban areas, in concert with their prevalence between teenagers and young adults for amusement.

Pesticides in the current study were the commonest agents accidentally used and also they constitute 38.4% of suicidal attempts. Pesticides were the commonest agents used in rural areas (60.8%). Florentine and Crane, (2010) stated that the availability of means to commit suicide has a major impact on actual suicides in any region. So, the high incidence of pesticide toxicity was due to their wide use in agriculture and hence their accessibility, low cost and being a household product in both urban and rural areas. In the present study, organophosphates were the commonest, this is because organophosphorous pesticides were commonly used in agriculture over the past decades (Balali-Mood et al.,2012). Females predominated males in using both therapeutic drugs and pesticides; this could be due to over predominance of females in this study.

Corrosives constituted 9.1% of patients mostly accidental in the range between 1- 10 years. This was in agreement with Pace et al., (2009) who observed that caustic ingestion were commonly in children less than 6years of age. Widespread

availability of highly caustic household product, such as window and drain cleaners and diswashing agents has increased the number of accidental caustic injuries in the pediatric population as well as the number of suicide attempts in the adult population (Watson et al., 2005).

As regard bites, the current study revealed that bites constituted 7.4% of all toxicities and they were totally accidental. Bites were more in males than females (62.2% and 37.8% respectively). It was also observed that bites were more in rural than in urban areas. Most of the snake bite cases were reported in September and October. Most of the victims in our study were bitten outdoors, mostly in the fields during the daytime and on their lower limbs. These bites were mostly due to accidental stamping on a snake while working, an observation that is common to similar studies conducted across India (Sharma, 2002).

Recreational substances included in this study were tramadol, alcohol, hashish and heroin where tramadol was the most prevalent. They were mainly used by drug abusers who got an accidental overdose which brought them to the poison control center. Use of recreational substances was predominant among males and in urban areas. Obviously, tramadol has replaced the other recreational substances in the Egyptian community. It is easily accessible and readily provided at cheap cost despite of it being scheduled. The alleged usages of tramadol had also contributed greatly to its popularity and massive use especially among Egyptian youth as a remedy for premature ejaculatory function and for extended orgasm as well as increasing sexual pleasure as promoted through many online drug stores and media (Salem et al., 2008).

There was a highly significance between accidental poisoning with kerosene and its use in suicidal attempts ($p=0.001$) especially in rural areas where it was still used as a fuel in some types of stoves. Litovitz, (1983) reported that kerosene poisoning sometimes occurs due to negligent repacking of kerosene in improperly labeled containers or bottles.

Benzene was more pronounced among accidentally poisoned patients than suicidal attempts ($p=0.005$) with predominance of males over females (69.2% and 30.8% respectively and in urban areas than rural areas (69.2% and 30.8% respectively).potential exposure to benzene in the workplace can be high in certain industries, such as the production of paint and organic chemicals. Environmental exposure can occur from gasoline and cigarette smoke. Indoor exposure could be due to products such as glue, paint, furniture wax, solvents and detergents (Runion & Scott, 1985; Ayres & Taylor, 1989 and Wallace, 1990).

Chlorine gas toxicity was also accidental (3.9% of all accidental cases). Females were more affected than males (66.7% and 33.3% respectively). Males were mostly below the age of 6 years. One very common method of chlorine exposure is the mixture of

household bleach with other cleaning agents containing acids or ammonia, as in mixing sodium hypochlorite with hydrochloric acid during cleaning activity This can produce toxic gas and leads to many poison control center visits (Cevik et al., 2009). There is no significance difference between rural and urban areas as regard chlorine toxicity ($p=0.059$).

Carbon monoxide (CO) is the commonest cause of inhalatory intoxication worldwide (Duenas-laita et al., 2001; Guratowska et al., 2006). In this study, CO poisoning was totally accidentally (2.6% of all accidental cases) due to malfunctions of household devices and/or faulty ventilation and air conditioning systems. No significant difference between urban and rural areas ($p=0.053$).

In the current study, number of death cases from poisoning was 5 cases (0.5%) who committed suicide with pesticides. Two cases were died with aluminium phosphide, two cases were died from organophosphates and the last case was died from zinc phosphide. This finding was in accordance with Jaiprakash, et al., (2011). Also, Hu et al (2010) showed that pesticide poisoning was responsible for the majority of deaths among the elderly poisoned patients. Meanwhile, in a study performed by Shadnia et al., 2007, the mortality rate was 1.3% (318 patients) and death was mostly occurred by opioids (41.54%), followed by drugs (28%) and pesticides especially organophosphates (12%).

Such death rate may be attributed to the substance used and its dose, delay time with increase in the initial peak blood level of poison that may induce irreversible tissue damage (George et al., 2004). In addition, other factors include personal variations, wrong treatment at home or inaccurate diagnosis. Some of the reasons include the dispensing of drugs in envelopes instead of child-resistant containers, increased affluence, free medical treatment an easy access to medications without even prescriptions in addition to the careless storage of drugs inside home (Al-Sekait, 1989).

Conclusion

In Tanta poison control center, the majority of acutely poisoned patients admitted in the year 2012 were in the age group between 1-10 years (31.2%). Females were 57.1% while males were 42.9%. Accidental poisoning occurred in 55.2% while suicidal attempts occurred in 44.8% of cases. Females (76.2%) predominate males (23.8%) in suicidal attempts while in accidental poisoning, males (58.5%) predominate females (41.5%). Psychologically disturbed patients were 1.1% of all acutely poisoned cases while drug abusers were 2.1%. Acute toxicity was more prevalent in rural areas (54.2%) than in urban areas (45.8%). The oral route was the main route of poison intake in both attempted suicide and accidental poisoning (82.2%). Therapeutic drugs were the commonest agents used (32.3%)

followed by pesticides (28.6%). Among therapeutic drugs, sedatives and hypnotics were the commonest (12.6%) while organophosphates were the commonest among pesticides (67.7%). Mortality rate was 0.5%.

Recommendations

The high rate of acute poisoned patients admitted to Tanta poison control center points to the necessity to establish and operate newer centers throughout El-Gharbia Governorate and to increase the number of beds and rooms in Tanta poison center. Legislations to ban over the counter selling of medications and to sell potentially dangerous chemicals in waterproof containers must be considered. More attention must be paid especially among families to improve their awareness about safety requirements inside homes. Appropriate prescriptions of drugs especially sedatives hypnotics and analgesics in adults will help to control acute poisoning. Strict control of pesticide accessibility to those with suicidal intent is important in minimizing pesticide poisoning related deaths. Registration of toxicological suicidal attempts as regards to causes, circumstances, substance used, dose, delay time, wrong treatment at home and related socioeconomic conditions will be required to increase toxicological alertness and to protect individuals from taking their own lives. Physicians have the responsibility to provide psychiatric care for people suffering from mental problems or depression. Finally, valuable approaches include patient education and earlier intervention.

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الملخص العربي

نمط التسمم الحاد بين المرضى الذين أدخلوا مركز علاج التسمم بطنطا خلال عام 2012

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ما زال التسمم الحاد مشكلة كبرى تهدد الصحة العامة كما أنها تمثل سبب متكرر لدخول وحدات الطوارئ وخاصة بالبلاد النامية لذلك تركزت كثير من الدراسات على الأنماط المختلفة للتسمم الحاد في المرضى الذين أدخلوا مراكز علاج التسمم. ولذلك كان الهدف من هذه الدراسة هو تحديد خصائص حالات التسمم الحاد التي دخلت مركز علاج التسمم التابع لمستشفى الطوارئ الجامعي بطنطا مصر.

وقد أجريت هذه الدراسة على جميع حالات التسمم الحاد التي تم إدخالها المركز في الفترة من يناير إلى ديسمبر 2012 بأثر رجعي. وقد تم جمع المعلومات من الخصائص الاجتماعية والديموغرافية وتاريخ الدخول وظروف التسمم والمواد المستخدمة وطريقة التعرض وكذلك معدل الوفيات وذلك من السجلات الطبية في المستشفى وقد تم دخول 1104 حالة خلال هذه الفترة. وكانت 57.1% من الإناث بينما نسبة الذكور 42.9%. وكانت الغالبية العظمى (31.2%) من الحالات في الفئة العمرية من سن سنة إلى سن عشر سنوات وكانت معظم الحالات من حالات التسمم العرضي (55.2%) بينما كانت محاولات الانتحار 44.8% من مجموع الحالات. وقد شكلت الإناث 76.2% من حالات التسمم العمد بينما الذكور 58.5% من حالات التسمم العرضي. وكان من أهم المواد المستخدمة للتسمم الحاد الأدوية الطبية (32.3%) وخصوصاً المنومات والمهدئات (12.6%) ويليهما المسكنات بنسبة 9.24% ثم أدوية علاج الأوعية الدموية والقلب (8.96%). وكانت مبيدات الآفات في المرتبة الثانية من المواد الأكثر استخداماً للتسمم في هذه الدراسة حيث شكلت 28.6% وخصوصاً مركبات الفوسفات العضوية (67.7%). وكان معدل الوفيات 0.5% وقد كانت جميع حالات الوفيات نتيجة لمحاولات الانتحار بمبيدات الآفات. ومن ثم فقد لخصت هذه الدراسة لأن أعلى معدل للتسمم الحاد كان بين المرضى من سن سنة إلى سن عشر سنوات. وكانت نسبة الإناث أعلى من الذكور في محاولات الانتحار بينما فاقت نسبة الذكور في حالات التسمم العرضي. كما أثبتت الدراسة أن الأدوية الطبية كانت أكثر المواد استخداماً

تلّتها مبيدات الآفات وتوصي الدراسة بأن توضع خطة لتحديد تداول المواد الأكثر استخداما في حالات التسمم سواء العمد أو العرضي.

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