

Toxic agents used for parasuicide in Damietta Governorate, Egypt

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Introduction

The study of parasuicide, which means all nonfatal suicidal behaviors, helps mental health professionals to understand the steps just before suicide and consequently improves the preventive measures and strategies to save suicidal victims as much as possible. The aim of this study was to identify the characteristics of persons who were most liable for parasuicidal behavior and to know the most common toxic agents used for parasuicide in Damietta Governorate, Egypt. This could help to put forward an effective protocol for the early management of these cases.

Methods

This study was carried out on 304 patients admitted to the Poisoning Control Center in Damietta Hospital, Al-Azhar University, after self poisoning. There were two main groups: the first group, the retrospective group, included 244 parasuicidal cases of self poisoning in the period 1 October 2004–1 October 2007, and the second group, the prospective group, included 60 parasuicidal cases of self poisoning in the period 1 November 2007–31 July 2008. All patients who were included were subjected to proper clinical, toxicological, and psychiatric evaluations.

Results

Female patients were more prevalent than male patients (67.8% : 32.2%). The mean age was 19.89 years. Single cases represented 88.5%, illiterate patients represented 10.2%, those with primary education (up to level 6) represented 0.7%, those with preparatory-stage education (levels 7–9) represented 4.9%, those with secondary-stage education (levels 10–12) represented 35.9%, and those with higher education represented 48.4%. Students represented the majority of cases (76.6%) followed by unemployed individuals (12.5%), farmers (5.6%), employees (3.3%), workers (1.3%), and nurses (0.7%). Patients coming from urban areas exceeded those from rural areas (55.9% : 44.1%). No drug dependence was reported in the studied groups; however, 14.8% of them were smokers. Family troubles were the most common precipitating factors (45.4%) followed by emotional problems (21.4%). There were seasonal variations in which 38.5% of cases presented in spring, 30.3% of cases presented in summer, 18.1% of cases presented in autumn, and 13.2% of cases presented in winter. Earlier parasuicidal acts were recorded in 13.2% of cases. Pesticides were the most commonly used toxic agents (95.1%) distributed as follows: organophosphates (69.1%), carbamates (9.9%), lindane (5.6%), warfarin (4.6%), zinc phosphide (3.9%), and paraquat (5.6%). Drugs were used in 4.9% of patients.

Conclusion

It seems that the young age group (adolescence in special), female patients, single persons, persons with secondary and higher education, unemployment, and patients exposed to family troubles and emotional problems are at higher risk of parasuicide (self poisoning) especially during spring and summer. Pesticides were the most common agents used for parasuicide in Damietta Governorate. Professional and public awareness focusing on all the above-mentioned factors is highly needed.

Keywords:

parasuicide, self poisoning, suicide, toxic agents

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Introduction

From the point of view of terminology, European suicidology seems to be oriented toward defining parasuicide as all nonfatal suicidal behaviors, regardless of their intentional nature (which is often difficult to investigate). In other words, parasuicide covers behaviors that may vary from an exclusively manipulatory attempt, to an

intentionally suicidal gesture and a serious act nonfatal by chance (including attempted and failed suicides) [1].

The Diagnostic and Statistical Manual of Mental Disorders, 4th ed. limits itself from including self-harming gestures among the diagnostic criteria of other psychiatric categories (major depression, borderline personality disorders), whereas the International Classification of

Disease (ICD) is more specific and speaks of suicide and self-inflicted injury, including injuries in suicide and attempted suicide and self-inflicted injury specified as intentional [2].

Each year, more than 30 000 persons die by committing suicide in the United States. The number of attempted suicides is estimated to be 650 000. There are approximately 85 suicides per day in the United States [3].

There are marked differences in suicidal behavior between developed and developing countries. In the developed countries, suicide rate is higher in the age group 15–24 years and in the elderly groups, the male to female ratio is 3:1, and the divorced, widowed, and separated have a high risk of suicide. In contrast, in developing countries, the highest rate is found in the young (below 30 years), the male to female ratio is narrow, and married women are at risk [4].

Self harm has often been thought of as a problem particularly in the industrialized world. It was reported that 593 000 people killed themselves in the developing world during 1990; 75% of worldwide deaths are from self harm [5].

Poisoning is a common form of deliberate self harm in the developing countries. The mortality rate is high due to the toxicity of the poisons used and poor medical care. Deliberate self poisoning has become an increasingly common response to emotional distress in young adults, and is now one of the most frequent reasons for emergency hospital admission [6].

Pesticide poisoning from occupational, accidental, and intentional exposure is a major public health problem in the developing world. There are several ecological studies supporting a potential link between organophosphate exposure and suicide [7].

The World Health Organization reports that pesticides are the most common method of suicide worldwide [8].

Pesticide self poisoning is a major contributor to population patterns of morbidity and mortality in developing nations. It was estimated that there are 300 000 self-inflicted pesticide deaths worldwide each year [9].

It was found that psychoactive drugs (particularly the benzodiazepines) are most frequently used by people making parasuicidal gesture [1]. The patient at highest risk of parasuicide has a number of characteristic traits, including the presence of psychiatric disorders, organic diseases, alcohol/drug dependence/abuse, and significant psychorelational disturbances [1].

The aims of this study were to describe the demographical and clinical variables of the patients admitted to the Poisoning Control Center in self-poisoning cases and to identify the most common toxic agents used for parasuicide.

Materials and methods

This study was carried out on 304 cases selected from 741 cases admitted to the poisoning control center in Damietta Hospital, Al-Azhar University, after self poison-

ing (parasuicide). The studied cases included two main groups: the first group, retrospective group, included 244 parasuicide cases of self poisoning in the period 1 October 2004 to 1 October 2007 and the second group, prospective group, included 60 parasuicide cases of self poisoning in the period 1 November 2007 to 31 July 2008. Inclusion criteria included diagnosis of self poisoning according to the International Classification of Diseases and stay of at least 1 day in the Damietta Hospital's Poisoning Control Center. Cases with fatal outcome were excluded from the study.

With regard to the prospective group, an informed consent was taken from all patients. Moreover, all the patients were subjected to clinical and toxicological evaluations and the Glasgow Coma Scale was used to measure consciousness [10]. After stabilization by medical treatment, the patients were subjected to psychiatric evaluation by psychiatric consultation from the Psychiatry Department of Damietta Hospital (Al-Azhar University). When appropriate, at the end of the clinical examination, the psychiatrist formulated a psychiatric diagnosis on the basis of the Diagnostic and Statistical Manual of Mental Disorders, 4th ed. criteria [2].

With regard to the retrospective group, the inpatient charts during the period 1 October 2004 to 31 October 2007 were reviewed and the cases diagnosed as self poisoned were extracted and studied for history, demographical data, clinical presentation, investigation, diagnosis, and treatment.

Statistics

The collected data were organized, tabulated, and statistically analyzed using SPSS software statistical computer package version 16 (SPSS Inc., Chicago, Illinois, USA). For quantitative data, the mean and standard deviation were calculated. The difference between two means was statistically analyzed using the Student's *t*-test. For qualitative data, the number and percentage of distribution were calculated. The χ^2 -test was used as a test of significance. Significance was adopted at a *P* value of less than 0.05 for the interpretation of results of tests of significance.

Results

This study included 304 patients; 98 (32.2%) were male patients whereas 206 (67.8%) were female patients. The mean age was 19.89 ± 4.17 years. Single cases represented 88.5% (269 cases) and married cases represented 11.5% (35 cases). It was found that there were two of 304 cases (0.7%) with primary education, 15 cases (4.9%) in the preparatory stage, 109 cases (35.9%) in the secondary stage, 147 cases (48.4%) with higher education, and illiterate cases were 31 in number (10.2%). Students outnumbered the others, representing 76.6%, followed by unemployed individuals (12.5%), farmers (5.6%), employees (3.3%), workers (1.3%), and nurses (0.7%). One hundred and seventy out of 304 (55.9%) cases were from urban areas whereas 134 cases (44.1%) were from rural areas. With regard to special habits, there was no drug dependence in the studied cases; however, smoking was found in 45 cases (14.8%) (Table 1).

Family troubles (conflicts) were the most common triggers, presented in 138 cases (45.4%), and then emotional troubles in 65 cases (21.4%). There were 117 cases (38.5%) presented in spring, 92 cases (30.3%) presented in summer, 55 cases (18.1%) presented in autumn, and 40 cases (13.2%) presented in winter. Earlier parasuicidal acts were recorded in 40 cases (13.2%). The delay time was from 2 to 4 h in most cases (141 cases; 46.4%), then from 4 to 12 h in 107 cases (35.2%), and less than 2 h in 56 cases (18.4%) (Table 2).

With regard to toxic agents, pesticides were the most commonly used materials (289 cases; 95.1%). They included organophosphates, (210 cases; 69.1%), carbamates (30 cases; 9.9%), lindane (17 cases; 5.6%), warfarin (14 cases; 4.6%), zinc phosphide (12 cases; 3.9%), and herbicides (paraquat) (six cases; 2.0%). Drugs were used in 15 cases (4.9%). There was no significant difference between the prospective and retrospective groups with regard to toxic agents (Table 3).

With regard to causative agents in comatose patients, the organophosphorus compounds were the most common material used (25 cases), followed by benzodiazepines in three cases and then lindane, paraquat, and carbamazepines in two cases each. Zinc phosphide and skeletal muscle relaxants were the causative agents in one patient for each substance. In the prospective group, there were seven patients presenting with coma, five of them (71.4) were due to organophosphate intoxication, one of them (14.3%) was due to benzodiazepine intoxication, and the other one (14.3%) was due to carbamazepine intoxication (Table 4).

Psychiatric evaluation showed that depression (major depressive disorder) was present in 13 out of 60 cases (21.7%) in the prospective group compared with 55 cases (22.5%) in the retrospective group. Personality disorders (border line personality disorder) were reported in six cases (10%) in the prospective group compared with 27 cases (11.1%) in the retrospective group (Table 5).

Table 1 Demographical data of all studied cases

Parameters	Results
Sex (number, %)	
Male	98 (32.2%)
Female	206 (67.8%)
Age (mean $\pm$ SD)	19.89 $\pm$ 4.17
Marital state (number, %)	
Single	269 (88.5%)
Married	35 (11.5%)
Educational level (number, %)	
Primary	2 (0.7%)
Preparatory	15 (4.9%)
Secondary	109 (35.9%)
High	147 (48.4%)
Illiterate	31 (10.2%)
Occupation	
Student	232 (76.6%)
Unemployed	38 (12.5%)
Farmers	17 (5.6%)
Employees	10 (3.3%)
Workers	4 (1.3%)
Nurses	2 (0.7%)
Residence (number, %)	
Urban	170 (55.6%)
Rural	134 (44.1%)
Smoking (number, %)	45 (14.8%)

SD, standard deviation.

Table 2 Characters of parasuicide in the studied cases

Parameters	Results
Circumstances (number, %)	
Emotional troubles	65 (21.4%)
Family troubles (conflicts)	138 (45.4%)
Seasonal variations (number, %)	
Spring	117 (38.5%)
Summer	92 (30.3%)
Autumn	55 (18.1%)
Winter	40 (13.2%)
Earlier attempt	40 (13.2%)
Delay time	
Less than 2 h	56 (18.4%)
2–4 h	141 (46.4%)
4–12 h	107 (35.2%)

Discussion

This study was designed to describe the demographical and clinical variables of the patients admitted to the Poisoning Control Center in self-poisoning cases. Identification of the risk factors that are correlated with suicide will help to detect the most common toxic agents used for parasuicide and also to put a protocol for early management of the cases. The results of this study indicate that parasuicidal act by self poisoning accounted for a considerable proportion (41%) of the admission to the poison control center of Damietta Hospital, Al-Azhar University, in the period 1 October 2004 to 31 July 2008. There was no significant difference between the retrospective and prospective groups with regard to the most studied variables.

With regard to sex distribution, this study showed that female patients predominate male patients. They represent 206 out of 304 cases (67.84%) whereas male patients represent 98 out of 304 cases (32.2%). This finding agreed with that of Okasha *et al.* [11] who found that female patients are more common in taking toxic substances when attempting suicide. This also agreed with Fahmy *et al.* [12] who found that female patients who attempted suicide by ingestion of toxic material represented 89.7% of cases in their study. This result also coincided with Mosa *et al.* [13] who found that suicidal incidence was more pronounced in female patients (54.8%) than in male patients, (20.9%), and the age of the victims ranged from 11–47 years.

With regard to age distribution in this study, the incidence of parasuicide peaked between ages 16 and 20 years (192 cases represent 63.2%) followed by the age group from 21 to 25 years (63 cases represent 20.7%). These results are in agreement with Platt *et al.* [14] who reported that the incidence of nonfatal self harm in industrialized countries is 20 times higher than that of suicide; in contrast to suicide, self-harm rates peak in the ages 15–24 years and are generally highest in women. Abd Elwahab *et al.* [15] found that the most commonly affected age group ranged from 10 to 30 years in the cases of organophosphate and carbamate poisoning.

This can be interpreted as: the age group 16–20 years is the period of adolescence, which has some personality traits, such as angry or aggressive behavior, high impulsivity, poor problem solving ability, unstable mood, and emotional disturbance. In addition, teenagers and

Table 3 Toxic agents used in parasuicide by the studied cases

Toxic agent	Prospective		Retrospective		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Organophosphates	32	53.3	178	73.0	210	69.1
Carbamate	6	10.0	24	9.8	30	9.9
Zinc phosphide	4	6.7	8	3.3	12	3.9
Warfarin	5	8.3	9	3.7	14	4.6
Lindane	5	8.3	12	4.9	17	5.6
Parquet	2	3.3	4	1.6	6	2.0
Total pesticides	54	90.0	235	96.3	289	95.1
Drugs	6	10.0	9	3.7	15	4.9
Total	60	100.0	244	100.0	304	100.0
Among groups			$\chi^2 = 11.93, P = 0.064$ (NS)			

NS, not significant.

young adults are subjected to stress, adaptations forced by tradition, industrialization, frustrated aspirations, and limited expectations. There are also difficulties with their romantic relationships and parent–adolescent arguments, which are common precipitants of suicidal behavior among this age group [16].

On considering the marital state, it was found that single cases represented 88.5% whereas married cases represented 11.5%. This high percentage of single patients was found in both male and female patients. The single cases involved 248 unmarried cases (92. 2%), 16 divorced cases (5.44%), and five widows (1.9%).

These results agreed with Mauri *et al.* [1] who found a high percentage of unmarried cases (60%) in an epidemiological study on parasuicide and drug self poisoning. This may be attributed to the fact that those who live alone (divorced, widowed, or separated) are at higher risk of suicide whereas marriage reinforced with children seems to vastly decrease the risk of suicide.

In this study, unemployed cases were 12.5% of the studied cases. Mauri *et al.* [1] found a high percentage of parasuicide in unemployed cases, which represented 16%. Unemployment can affect parasuicide by influencing the unemployed individuals themselves and their family members; it can decrease income, reduce self esteem, increase anxiety, increase sense of hopelessness, and cause marital strain.

With regard to occupation in this study, farmers who lived in rural areas and worked in agriculture represented 5.6% of the studied cases. Workers represented 1.3%, employees represented 3.3%, and nurses represented 7%. Other

studies [17,18] reported that physicians are at higher risk of suicide compared with the rest of the population.

It was found that 55.9% of patients were living in urban areas whereas 44.1% of patients were living in rural areas. Increased number of urban parasuicide cases may be due to life stressors that are present more in urban than in rural areas, as the majority of those who attempted suicide had a number of life stressors [18]. The high percentage of parasuicide in rural areas may be due to the change in rural lifestyle, which became nearly similar to urban areas. Pesticides, as would be expected are particularly problematic in rural areas, where they are freely available.

Smokers represented 14.8% in this study. Miller *et al.* [19] found a dose–response relationship between smoking and suicide, controlling for education, race, alcohol consumption, marital status, level of physical exercise, and military rank.

Family troubles were found to be the most common factors related to parasuicide in this study as they were presented in 138 cases (45.4%); this was followed by emotional troubles that were presented in 65 cases (21.4%). This result is consistent with the study by Fahmy *et al.* [12], in which it was found that the majority of stresses that preceded suicide attempt were usually of acute onset, being related to problems at home and represented 79.5% of the studied cases. These included harsh treatment of patients, especially the female patients, by one or both parent.

Some studies [4,6] reported that self poisoning often occurs immediately after an acute relationship crisis, not after long hours of premeditation.

Table 4 Causative agent in comatose patients

Causative agent	Prospective		Retrospective		Total	Percentage
	Number	Percentage	Number	Percentage		
Organophosphates	5	71.4	20	68.9	25	69.4
Lindane	0	0.0	2	6.9	2	5.6
Paraquat	0	0.0	2	6.9	2	5.6
Zinc phosphide	0	0.0	1	3.4	1	2.7
Benzdiazepines	1	14.3	2	6.9	3	8.3
Carbamazepine	1	14.3	1	3.4	2	5.6
Skeletal muscle relaxant	0	0.0	1	3.4	1	2.7
Total	7	19.4	29	80.6	36	100.0

Table 5 Psychiatric diagnosis in studied parasuicide patients

	Prospective		Retrospective		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Depression	13	21.7	55	22.5	68	22.4
Personality disorders	6	10.0	27	11.1	33	10.9
Among groups	$\chi^2=0.31, P=0.83$					

With regard to seasonal variation, the maximum incidence of parasuicidal attacks occurred in spring, mainly in April and May. This could be explained on the basis that this period precedes examination in most schools and universities, which is characterized by high levels of stresses.

No significant seasonal correlation with suicide has been found. Suicides increase slightly in spring and fall, but, contrary to popular belief, not during December and holiday periods [20].

Cases with a history of parasuicidal acts were 40 in number (13.2%). Mauri *et al.* [1] found that 30% of the cases had a history of parasuicidal episode. A history of suicide attempt, whether single or recurrent, without other factors is considered a great risk of suicidal behavior [21].

In this study, it was found that pesticides were the most common agents used in parasuicide (289 cases; 95.1%). Organophosphates were the most common pesticides used. This is in agreement with Eddleston [6], who reported that pesticides are the most important poisons used for self harm worldwide.

Organophosphates were used in 69.1%, carbamates in 9.9%, lindane in 5.6%, warfarin in 4.6%, zinc phosphide in 3.9%, and herbicides in 2.0% of the studied cases. Drugs were used in 15 cases (4.9%). Phillips *et al.* [4], reported that in rural China, pesticides account for over 60% of suicides. Jeyaratnam, in his study, [22] estimated that in the world there are approximately 2 million annual suicide attempts involving pesticides. In contrast, the percentage of hospital admissions for pesticide poisoning attributable to suicide in Sri Lanka have ranged from 36% in 1983 to 68% in the period 1991–1994 [23].

In South Africa, suicide constitutes the largest cause for pesticide poisoning notification (approximately 35–40%) [24]. Cases in which suicide is associated with pesticide poisoning, the agents implicated in suicide are largely organophosphates and carbamate [23].

Organophosphates were responsible for the majority of deaths in most series of self-poisoning cases, particularly those from rural areas [25]. Abd Elwahab *et al.* [15] found that the mode of poisoning of organophosphate and carbamate compounds was mainly suicidal, which represented 62.6% followed by accidental that represented 31.8%.

In addition, Manuel *et al.* [26] reported that the most common poisons ingested (irrespective of outcome) were pesticides representing 55.8% of cases, the majority of which were organophosphate insecticides.

In this study, other pesticides used in parasuicidal behavior included carbamates (30 cases 9.9%), zinc

phosphide (12 cases 3.9%), warfarin (14 cases 4.6%), lindane (17 cases 5.6%), and paraquat (six cases 2%).

Other studies [27,28] stated that self poisoning with carbamates has been recorded in Jordan and Brazil, where the majority occurred after the ingestion of carbamates in the form of rodenticide. Lindane has been associated with a few cases of self harm [29]. Paraquat has been reported to be a problem in many parts of the world including Brazil, Dominican, Ecuador, Korea, Malaysia, Mexico, and Nigeria [6].

In this study, 11.8% of the cases presented with coma and the causative agents were pesticides in 83.3% of the cases, which included organophosphates (69.4%), lindane (5.6%), paraquat (5.6%), and zinc phosphide (2.7%). Coma was caused by drugs in 16.7% of cases, which included benzodiazepine (8.3%), carbamazepine (5.6%), and a skeletal muscle relaxant (chlorzoxazone) (2.7%).

Wijdicks's study [30] stated that common causes of coma are traumatic brain injury, hypoxic-ischemic encephalopathy, drug overdose, ischemic stroke, intracranial hemorrhage, central nervous system infections, and brain tumors. Common causes of toxic coma included medication overdose/adverse effects, for example, opioids, benzodiazepines, barbiturates, tricyclics, neuroleptics, aspirin, selective serotonin reuptake inhibitors, acetaminophen, anticonvulsants, alcohol, methanol, ethyleneglycol, amphetamines, cocaine, and exposure to carbon monoxide, heavy metals, and pesticides.

Becker and Ulatowski [31] mentioned that disorders of consciousness, such as coma, are potentially life threatening and warrant a rapid and structured approach.

Major depressive disorder and borderline personality disorder were the psychiatric diagnoses in 101 cases of the studied cases representing 33.2%. Major depressive disorder was diagnosed in 68 cases representing 22.4% and borderline personality disorder was diagnosed in 33 cases representing 10.7%.

This result is in line with several studies that found that mood disorders are the psychiatric diagnoses most frequently associated with parasuicide and suicidal behaviors [32].

Depressive mood disorder is a psychiatric diagnosis most commonly associated with suicide, and thus, depression is one of the important risk factor for suicide [3].

In conclusion, this study showed that pesticides are the most common agents used in attempting suicide (parasuicide). In addition, drugs, especially, psychoactive drugs were responsible for another percentage of cases and it

showed continuous increase across time. Furthermore, attempted cases of suicide are due to family conflicts and associated with personality disorders.

There is no conflict of interest to declare.

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الملخص العربي

المواد السامة المستخدمة في محاولات الإنتحار في محافظة دمياط , مصر

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الخلفية : دراسة محاولات الإنتحار ، والتي تعني جميع السلوكيات الإنتحارية غير المميتة تساعد العاملين في مجال الصحة النفسية لفهم الخطوات التي تسبق الإنتحار وتحسن بالتالي من اتخاذ تدابير وقائية واستراتيجيات لحماية أكبر عدد ممكن من ضحايا الإنتحار. الأهداف : التعرف على خصائص الأشخاص الأكثر عرضة لمحاولة الإنتحار ، ومعرفة المواد السامة الأكثر شيوعا والمستخدمه في محاولات الإنتحار في محافظة دمياط ، والتي يمكن أن تساعد على وضع بروتوكول فعال للمناجزة المبكرة لهذه الحالات. العينة وطرق البحث : أجريت هذه الدراسة على 304 مريضا ومريضة أدخلوا إلى مركز التسمم في مستشفى دمياط ، جامعة الأزهر بعد التسمم الذاتي. هناك مجموعتين رئيسيتين : الأولى : المجموعة الإسترجاعية ، وشملت 244 حالة محاولة تسمم ذاتي في الفترة من 1 أكتوبر 2004 م إلى 1 أكتوبر 2007 م ، والثانية هي مجموعة المحتملين وشملت 60 حالة محاولة تسمم ذاتي في الفترة من 1 نوفمبر 2007 م إلى 31 يوليو 2008 م. وقد خضع جميع المرضى في الدراسة لتقييم إكلينيكي تسممي ونفسي .

النتائج : كانت الإناث أكثر تمثيلا في العينة مقارنة بالذكور (67.8 % : 32.2 %) ، وكان متوسط العمر 19.89 سنة ، ونسبة غير المتزوجين 88.5 % ، والأميون 10.2 % من المرضى ، والذين لديهم تعليم ابتدائي (ما يصل الى مستوى 6) 0.7 % ، والمرحلة الإعدادية (المستويات 7-9) 4.9 % ، والمرحلة الثانوية (مستويات 10-12) 35.9 % ، وأخيرا التعليم العالي 48.4 % . وكان الطلاب يمثلون معظم الحالات (76.6 %) ، يليهم العاطلين عن العمل (12.5 %) ، والمزارعين (5.6 %) والموظفين (3.3 %) والعمال (1.3 %) والمرضات (0.7 %) . ونسبة المرضى القادمين من المناطق الحضرية كانت أعلى من أولئك القادمين من المناطق الريفية (55.9 % : 44.1 %) . لم تسجل حالات إدمان المخدرات في المجموعات التي تمت دراستها ، لكن 14.8 % منهم كانوا من المدخنين. واتضح أن مشاكل الأسرة هي أكثر العوامل شيوعا (45.4 %) تليها المشاكل العاطفية (21.4 %) . وكانت هناك اختلافات موسمية حيث 38.5 % من الحالات جاءت في فصل الربيع ، 30.3 % في الصيف ، 18.1 % في الخريف و13.2 % في الشتاء. وسجلت محاولات انتحار سابقة في 13.2 % من الحالات. وتبين أن مبيدات الآفات كانت الأكثر شيوعا بين المواد السامة المستخدمة (95.1 %) موزعة على النحو التالي : المركبات العضوية الفوسفاتية (69.1 %) ، الكارباميتات (9.9 %) ، ليندين (5.6 %) ، الوارفارين (4.6 %) ، فوسفيد الزنك (3.9 %) وأخيرا الباراكوات (5.6 %) . واستخدمت العقاقير في 4.9 % .

الخلاصة : يبدو أن الفئات العمرية الشابة (في سن المراهقة خاصة) ، والإناث ، وغير المتزوجين ، وذوي التعليم الثانوي والعالي ، والذين هم بدون عمل ، والمرضى المعرضين للمتابع الأسرية والمشكلات العاطفية هم أكثر عرضة لمحاولات الإنتحار (من خلال التسمم الذاتي) وخاصة خلال فصلي الربيع والصيف . وأن مبيدات الآفات هي الأكثر شيوعا في محاولات الإنتحار في محافظة دمياط. ومن هنا تتضح الحاجة إلى التوعية المهنية وتوعية الناس مع التركيز على عوامل الخطورة السابق ذكرها .