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PAPER

PSYCHIATRY/BEHAVIORAL SCIENCE

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Suicide Trends in Upper Egypt

ABSTRACT: Suicide is an important problem, ranking among the top 10 causes of death for individuals in all ages in developed countries. This article is a retrospective study evaluating suicide cases in Assiut, one of the largest provinces in Egypt, from 2005 to 2009. There were 117 cases, of which involved 68 male victims (58.12%) and 49 women (41.88%). Suicide rates ranged from 0.6 to 0.8 per 100,000. Age predominance was from 20 to $\leq$30 years. The method of suicide was different between male and female victims, as male victims tried to use more violent methods than females. The most common cause of death in men was usage of toxins and by hanging 29% and 28%, respectively, while in women was usage of toxins (70%). This study showed that suicide rates have increased since 1987, indicating a grave problem that needs to be solved.

KEYWORDS: forensic science, suicide, Assiut, Egypt, victims, violent, problem

Suicide is an important problem, ranking among the top 10 causes of death for individuals of all ages in developed countries. It is believed that the most dramatic increase in suicide mortality will be observed in Third World countries because of socioeconomic and behavioral factors (1). Every year, almost one million people died as a result of suicide, with a mortality rate of about 16 per 100,000, which means that one death occurs every 40 sec. In the last 45 years, suicide rates worldwide have increased by 60%. Suicide is among the three leading causes of death among people aged 15–44 years in some countries and the second leading cause of death among those aged 10–24 years; these figures do not include the suicide attempts, which are up to 20 times more frequent than completed suicide (2).

The most important problem in Egypt is that there is no data bank for suicide cases. This causes the suicide problem to be underestimated and, thus, neglected by the government, although this problem seems to be universal (3–6). The last data found regarding suicide rates in Egypt, according to the WHO, were in 1987 (7).

According to the WHO's regional distribution, the lowest rate of suicide was found in the Eastern Mediterranean region (EMR), which comprises mostly Arabic countries, but this researcher feels that this is because of the underestimation of suicide cases in this area. In the EMR, suicide death rates are still low in comparison with those of the European, Pacific, and Asian regions. In 2000, suicide was estimated to be the 25th leading cause of death in the EMR but was ranked seventh in the European region, eighth in the Western Pacific region, and 16th in the South East Asian region (8).

A great reason that Egypt has received little attention from suicidologists is that suicide has not been looked upon as a problem of any importance; there is a wish to deny its existence. This attitude may be explained partly by the fact that Egyptians, from the dawn of their history, have worshipped life (9). Religion also may play a great role in giving people defenses against isolation or alienation (10). There is a general agreement that previous statistics on the incidence of suicide in Egypt are grossly inadequate and that their comparison based on the figures available is inaccurate and misleading (9). In addition, the features of deaths caused by suicide are changing constantly, revealing complex social and cultural developments (11). This idea supported by Rezaeian (12), who highlighted that, within Muslim-dominated Middle Eastern countries, suicide rates are increasing among young women, and the study confirmed that there are high rates of suicide and attempted suicide among young Muslim women in the Middle East. Furthermore, Pritchard and Amanullah (13) suggested that, to avoid the under reporting of suicides, both formal suicide verdicts and other violent deaths should be considered together because the other violent deaths may include hidden suicides.

Aim of this Retrospective Study

- To investigate different causes of suicide among those living in Upper Egypt.
- To compare the suicide rates among different age groups and between sexes.
- To compare the method of suicide between male and female victims.

Subjects and Methods

Data Collection

Data on suicide incidence, age, sex, residence (urban or rural), season, previous attempts, the presence or absence of mental disease history, and methods of suicides were collected retrospectively from the Forensic Medicine Institute in the Assiut province from 2005 to 2009. The Forensic Medicine

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Institute reports include full autopsy and toxicological analysis for the cause of death to differentiate between cases of homicidal, suicidal, or accidental cause of death.

The Assiut province (one of the biggest Upper Egypt provinces) has a population of about 3,444,967, according to 2006 statistics (14). The Assiut province is a large one, containing 10 cities: Dairout, El Kousia, Abnoub, Manfalout, Assiut, El Fath, Abouteeg, Elghanaym, Sahel Seleem, El Badary, and Sedfa (15).

Suicide methods were classified into seven groups according to the cause of death: poisoning by drugs, poisoning by other means, hanging, drowning, firearm, falling from a height, and burns.

Statistical Analysis

The suicide rates in the Assiut province were calculated for each year from 2005 to 2009 and classified according to sex and age group. In addition, the youth suicide rates in Assiut were compared with the elderly suicide rate, and the rates between men and women were compared. The comparison between men and women was performed to assess suicidal tendencies, and the differences between them with respect to pattern of death were evaluated with a confidence interval of 95% using SPSS program version 15.

Results

The suicide data collected in the period from 2005 to 2009 is shown distributed by year and age group in Table 1. This table shows that the total number of cases of suicide in Assiut during this period was 117. The suicide rate per 100,000 ranged from 0.551 in 2008 to 0.813 in 2007. Table 2 shows the distribution of suicide cases among men and women per year. It shows that the rate for men was 58.12% and the rate for women was 41.88%. The suicide cases were concentrated in the age group of 20 to $\leq$30 years (36.75%), followed by the age group of 30 to $\leq$40 years (23.08%), which is the full youth age range, and this indicates a big problem. The table also shows that the tendency of men to commit suicide was more than that of women in the same age groups; this is shown in Figs 1 and 2.

Figure 3 shows the distribution of cause of death in suicide cases among men. It shows that suicide using toxins was the most common method among men (29%), followed by hanging (28%), firearm (16%), burns (12%), drowning (10%), and, finally, falling from a height (5%). Furthermore, Fig. 4 shows the distribution of cause of death in suicide cases among women. It shows that suicide by toxins is the first most common cause of suicide among women (70%), followed by burns (12%), drowning and falling from a height (6% each), hanging (4%), and, finally, firearm (2%), only one case out of 49 being by firearm injury.

Table 3 and Fig. 5 show the most common toxins used in suicide among men and women. It shows that the number of cases among women is greater than that of men. The most common toxin used among both men and women was organophosphates. Other toxins used were drugs, carbamate, lanet, phenols, phosphorous, strychnine, and toxafen.

Figure 6 shows the distribution of the site of firearm injuries in suicide cases among men and women. It shows that the most common area for firearm injury was the forehead (42%), followed by the abdomen (25%), chest (17%), and roof of the mouth and neck (8% each).

TABLE 1—*Distribution of suicidal cases according to age group per year.*

		Suicidal Frequency Per Age Group														Suicid Rate
Year		$0 \leq 10$		$10-\leq 20$		$20-\leq 30$		$30-\leq 40$		$40-\leq 50$		$50-\leq 60$		$60-\leq 70$		$70-\leq 80$		Total		%	%	Per 100.000
2005	M	0	0	3	5	6	9	3	7	1	2	2	2	0	1	1	1	16	26	13.67	22.2	0.754
	F	0		2		3		4		1		0		0		0		10		8.54		
2006	M	0	0	0	2	0	5	2	5	1	2	2	2	1	2	2	2	8	20	6.83	17.1	0.58
	F	0		2		5		3		1		0		1		0		12		10.25		
2007	M	0	0	0	2	8	15	4	6	1	2	1	2	1	1	0	0	15	28	12.82	23.9	0.813
	F	0		2		7		2		1		1		0		0		13		11.11		
2008	M	0	0	1	4	2	5	3	3	3	3	2	2	1	1	0	1	12	19	10.25	16.2	0.551
	F	0		3		3		0		0		0		1		1		7		5.98		
2009	M	0	0	1	4	7	9	4	6	3	3	1	1	1	1	0	0	17	24	14.53	20.5	0.697
	F	0		3		2		2		0		0		0		0		7		5.98		
Total		0		17		43		27		12		9		5		4		117		100		

TABLE 2—*Distribution of suicidal cases according to the sex.*

Year	Male	Female	Total
2005	16	10	26
2006	8	12	20
2007	15	13	28
2008	12	7	19
2009	17	7	24
Total	68	49	117
%	58.12	41.88	100

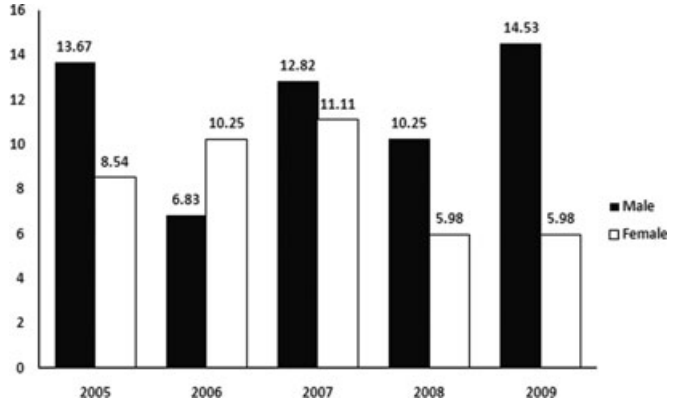

FIG. 1—*Distribution percentage of suicidal cases per year in Upper Egypt (2005–2009).*

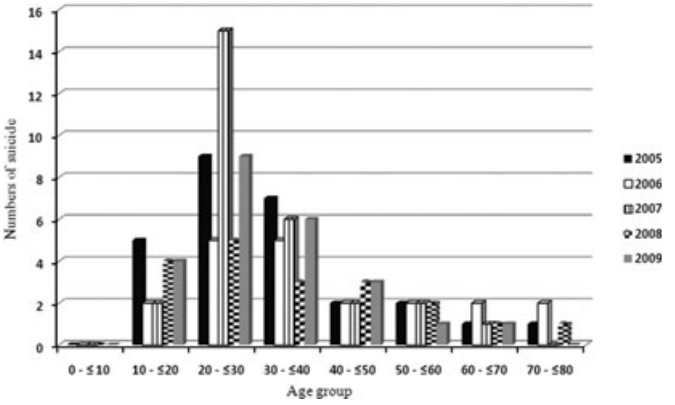

FIG. 2—*Distribution of suicide deaths per year and age group.*

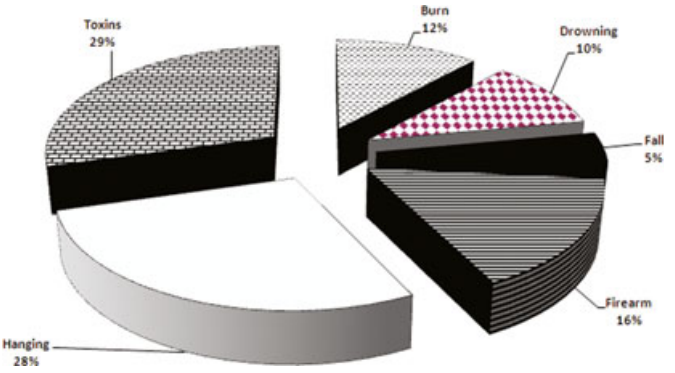

FIG. 3—*Cause of death in male suicidal cases in the period of 2005–2009.*

Discussion

The present study evaluated the rates, trends, and distribution of suicide from 2005 to 2009 in Assiut, one of the largest cities in Upper Egypt. The average rate of suicide during the study period ranged from 0.6 to 0.8 per 100,000 persons. The rate substantially exceeded the 0.1 and 0.0 (men and women, respectively) per 100,000 persons reported by the WHO for Egypt in 1987. This may be explained by the effect of increasing depression among people, which is aggravated because of social problems such as unemployment (16) and spinsterhood (17). An additional factor that may aggravate the state of depression in youth, especially among men in our area, is the increase in drug abuse among youth, which is difficult to explain: does the depression lead them to use these drugs or does the drug abuse increase depression? This idea is supported by the work of Yassa et al. (18), who indicated that bango (cannabis leaves), a commonly abused drug, was widely spread among youth in Upper Egypt, concentrated in the age group between 21 years and ≤ 31 years, which is the same age group that has the highest suicide rate.

The fact that the suicide rate is still lower than that of other countries may be explained by the effect of religion and the good relations between family members throughout the country, especially in Upper Egypt. This idea is supported by the work of Setenay et al. (19), who reported that religion plays a great role, especially with respect to a belief in an afterlife, which averts feelings of hopelessness, a feeling that has been described as an important predisposing factor for suicide.

The present study showed that there were gender differences in suicide rates, with rates for males being higher for most of the period of the study. This may be explained by the increasing stress on men, mainly in Upper Egypt, where the work load is greater for them. These results may be compared with those of other countries, as in the work of Bjerkeset et al. (20), who demonstrated in a follow-up study of failed suicide attempts over a period of 8 years that there was a higher suicide risk in men than in women, as they are more susceptible to anxiety and depression (5,21,22).

The age distribution for men and women appeared to be in the age range of 20 to ≤ 30 years and the age group of 30 to ≤ 40 years, which is the age of youth and work and, in women, the age of reproduction. This indicates the existence of a problem: a decrease in the chance of working and the chance of marriage in women. Gad ElHak et al. (1) supported these results in demonstrating that the age group with the highest rate of suicide in Port Said, another city in Egypt, was in the age group of 20–30 years. The suicide rate decreased as age increased among men and women, which can be explained by the increase in the level of responsibility of men and women toward their families.

The causes of death among men differed from those of women, as shown in Figs 3 and 4. In men, the main cause of death was toxins (29%), followed by hanging (28%), firearm (16%), burns (12%), drowning (10%), and falling from a height (5%), while, in women, the distribution of causes of death was as follows: toxins (70%), followed by burns (12%), drowning (6%), falling from a height (6%), and firearm injuries (2%). This can be explained by the differences in the personality characteristics between men and women, as men mostly chose more violent methods of suicide. These results matched those of Hawton (23), who stated that the suicide rates in most countries are higher among men than in women, except for China, which has very high rates of suicide in women, especially in rural

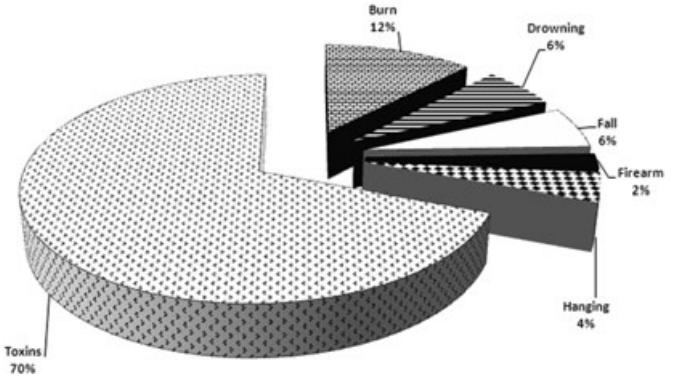

FIG. 4—*Cause of death in female suicidal cases in the period of 2005–2009.*

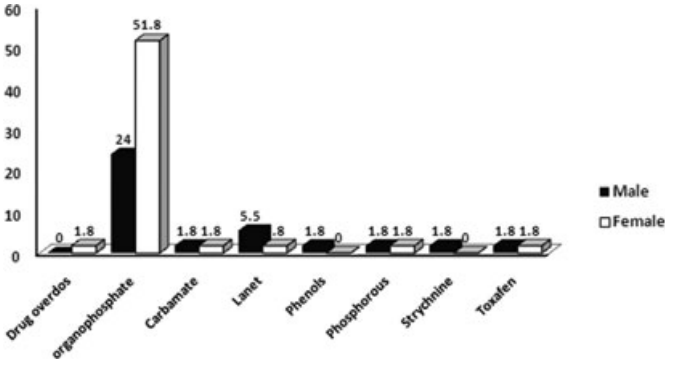

FIG. 5—*Distribution percent of toxins used in suicide among males and females in Upper Egypt.*

areas. This is explained by the fact that women seek help for psychological problems more than men (20,23,24). These results differ from those of the WHO record, which classify the methods of suicide in different countries according to the WHO mortality database, finding that, in most of the studied countries (not including Egypt), hanging was the most frequent cause of suicide among men, followed by firearm injuries and poisoning (25).

In the present study, the most common toxin used for suicide among men and women was organophosphates, comprising 75.9% of all suicidal cases, followed by lanet, carbamate, and toxafen (7.4%, 3.7%, and 3.7%, respectively). Jaga and Dharmani (26) found that there was a relation among populations exposed to organophosphates, which leads to neurobehavioral effects, depression, suicide, and death. Furthermore, London et al. (27) found that suicide rates were high in farming populations. They found that exposure to organophosphates led to serotonin disturbances, which are implicated in depression and suicide. The availability of organophosphates in the Egyptians provinces is very common, available for all especially farmers.

In the present study, suicide by firearm injuries was more common for men, and the most common area found to be affected was the forehead (42%), followed by the abdomen (25%), chest (17%), neck (8%), and roof of the mouth (8%).

Conclusion

Suicide is a very grave problem that may be caused and aggravated by many factors that occur in our society, such as unemployment and spinsterhood. Suicide affects mainly youth who are capable of work, which causes a big loss to the community. Therefore, all efforts should be directed to solving youths' problems to decrease the rate of suicide in our society.

TABLE 3—*Most common toxins used in suicide among males and females.*

	Sex			
Type of Toxins	Male	Female	Total	Percent
Drug overdose	0	1	1	1.85
Organophosphate	13	28	41	75.9
Carbamate	1	1	2	3.7
Lanet	3	1	4	7.4
Phenols	1	0	1	1.85
Phosphorous	1	1	2	3.7
Strychnine	1	0	1	1.85
Toxafen	1	1	2	3.7
Total	21	33	54	100

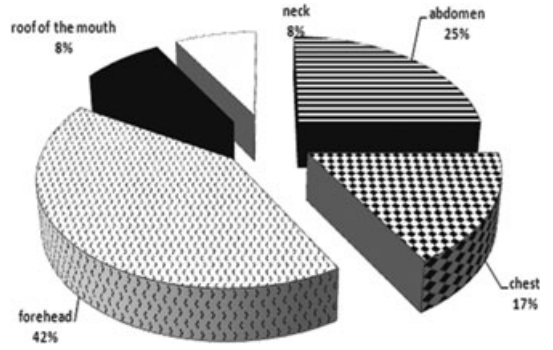

FIG. 6—*Distribution percentage of site of the firearm injuries used in suicide among males and females in Upper Egypt.*

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