Original Article

Deliberate Self Poisoning at National Poisoning Control Centre

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ABSTRACT

OBJECTIVE: To identify the risk factors contributing towards deliberate self-poisoning.
METHODOLOGY: A prospective and descriptive study of patients admitted in National Poisoning Control Centre, Ward-5, Jinnah Post Graduate Medical Centre, Karachi conducted over six months. All adult patients presenting with deliberate self-poisoning were included in the study. The cases with accidental or homicidal poisoning and poisoning for purpose of theft and burglary were excluded from the study. The information was gathered using a questionnaire generated from World Health Organization IPCS INTOX "Recording Format for Toxic Exposure".The data was analyzed on computer package SPSS ver. 14.0. The results were obtained as numbers and percentageswith means and standard deviation where applicable.
RESULTS: 374 patients were analyzed during this period. The age group most frequent (54.3 %) is within the range of 15-24 years and 61.5 % of the subjects were male. Most of the patients were illiterate, with no employment and were unmarried. The toxic substance most commonly employed for attempted suicide was pesticide; it was taken most frequently orally, at home and during daytime. It was the first attempt for the majority of the subjects. Most subjects belonged to lower socioeconomic class and had no dependents. 34.5 % had history of drug abuse, 16.3 % had history of psychiatric illness. Few subjects had physical illness or history of suicide or parasuicide in family.
CONCLUSION: Deliberate self-poisoning is a significant problem among the male youth in Pakistan. Lower socioeconomic status, changing social mores and stress contribute towards deliberate self-poisoning.

KEY WORDS: Deliberate self-poisoning, Suicide, Poisoning.

INTRODUCTION

Deliberate self-harm (DSH) includes intentional self-poisoning or self-injury irrespective of the apparent purpose of the act. Self- poisoning for example, an over dose is the most common form followed by cutting.[1]

Deliberate self-poisoning is voluntary self-ingestion of a substance in excess of any prescribed or generally recognized therapeutic dose irrespective of the apparent purpose of the act.[2]

There are around one million deaths annually due to suicide.[3] WHO has documented that the worldwide yearly mortality due to suicide is approximately one million with twenty times more people attempting suicide in the same period. There is one death every 40 seconds and one attempt every 3 seconds on average.[4] The risk of a person committing suicide increases around 50-100 times after attempting deliberate self-harm as compared to the general population. It has been assessed that after the first attempt of deliberate self-harm 1 in 15 patients will die by suicide within nine years.5Recently a large number of patients have been admitted to medical wards with the act of DSH. A small minority have the intention to take their lives, rest have other motives for their actions or suffer from a psychiatric disorder.[6]

Incidence of DSP in Pakistan is about 8 per 100,000 in men and women.7This estimate has limitations because of the fact that DSP evaluation in Pakistani settings is difficult.

Not all people who die following self-harm actually wish to die. Instead these acts are used to express rage or hostility or to gain revenge by causing distress to another person or finaly. People who do not wish to kill themselves often do succeed; in contrast, others with little or no suicidal intent die from their act.[8]

Suicide incidence is increasing in the younger age group. DSH is also on the rise among the youth in both developed and developing countries. Youth is an impressionable state. Suicide or DSH in family or surroundings leads to increased vulnerability of our population. Deliberate self-harm has been found to be more common in females, people belonging to low socioeconomic groups, poor educational background, victims of physical or sexual abuse and patients with history of psychiatric illness.[9]

Organophosphate pesticides are the predominant poison used worldwide. Most cases of pesticide poisoning are seen in the developing world.As pesticide use in these countries is very extensive and unregulated so it is commonly available for use as a suicidal agent.[10, 11] Medications are also commonly used.

Majority of these poisons are less toxic but deaths do occur with barbiturates and benzodiazepines.[12] Paracetamol, is commonly used in U.K.Household and industrial chemicals can also be used as agents for deliberate self-poisoning.

The prompt diagnosis and correct management of all poisoning cases is required to reduce mortality. Some poisons such as organophospates need intensive care. The first step with all poisons is decontamination. With most poisons that are taken orally gastric lavage is indicated. Specific should be administered according to the poison taken.[10]

This study was conducted to find risk factors related to demographic data, socioeconomic conditions, family ties, type of poison and psychiatric predictors which contribute towards deliberate self-poisoning. These risk factors can help to identify the susceptible population. Thus preventive strategies will be based on knowledge about the characteristics of this population.

METHODOLOGY

This is a descriptive and prospective study. It was conducted at the National Poisoning Control Centre; Ward 5, Jinnah Post Graduate Medical Centre, Karachi. The duration of the study was six months.

All the 374 patients coming to the National Poisoning Control Centre through the emergency and accident department Jinnah Post Graduate Medical Centre, during this period, were included in this study. The sampling was done by consecutive sampling. Deliberate self-poisoning was identified if the act had been deliberate and was done with full knowledge that it was potentially harmful. All adult cases of both sexes were included in the study. Accidental and homicidal poisonings or poisoning for purpose of theft and burglary were excluded. All pediatric patients were also excluded.

The proforma was based on a questionnaire issued by WHO IPCS INTOX project “Recording Format for Toxic Exposure” which is used internationally for collection of data, related to deliberate self-poisoning.

These risk factors included gender, age, marital status, dependents, occupation, employment status, income, educational status, chemical taken, place of incidence, route of exposure, time of attempt, number of agents taken, history of physical or psychiatric illness and any history of suicide or deliberate self-harm in the family. The proforma was filled by taking information from the patient or the attendant, if the patient was unconscious.

The data entry and analysis was on computer package SPSS ver 14.0. The results were obtained in numbers and percentages with means and standard deviation where applicable.

RESULTS

A total of 374 patients admitted to the National Poisoning Control Centre, with deliberate self-poisoning, were analyzed. There was a majority of male subjects (n = 230, 61.5%) as compared to female subjects (n = 144, 38.5%). The age of the subjects ranged from 13 to 70 years and the mean age $\pm$ S.D. was 25 $\pm$ 10.1 years. The largest number of patients belonged to the age group of 15-24 years. (Table-I)

Most of the subjects were unmarried. The percentage of married and unmarried subjects is 29.7% and 67.6% respectively. (Table-I)

The majority of the subjects (n = 245, 65.5 %) had no dependents. Majority of the subjects were illiterate, unemployed and belonged to a lower socioeconomic group.

The occupation survey showed that 24.9 % (n = 93) were laborers while 17.9 % (n = 67) were in service. (Table-I)

Organophosphate pesticide was the most common toxic substance employed. Most poisoned themselves at home during the day. The route of poisoning was oral in 95.5 % of the subjects. (Table-II)

34.5 % subjects had history of drug abuse while there was no antecedent toxic habit in 65.5 % of the subjects. For 342 (91.4 %) subjects it was their first attempt while 32 (8.5 %) subjects had previous episodes of suicidal attempts. (Table-II)

In our study only 16.2% of the subjects had history of psychiatric symptoms, drug dependence or a diagnosed psychiatric illness.40 % of the subjects had a diagnosed medical illness. Only 1.3 % had a history of suicide or parasuicide in the family. (Table-III)

TABLE I: SOCIOECONOMIC FACTORS AFFECTING DELIBERATE SELF POISONING

Patient characteristics		Number	Percentage
Gender	Male	230	61.5
	Female	144	38.5
Age (years)	<15	9	2.4
	15 – 24	203	54.3
	25 – 34	105	28.1
	35 – 44	35	9.4
	45 – 54	9	2.4
	55 & above	13	3.5
Marital status	Married	111	29.7
	Unmarried	253	67.6
	Divorced	5	1.3
	Separated	5	1.3

Dependents	Yes	129	34.5
Occupation	Business	8	2.1
	Service	67	17.9
	Professional	1	0.3
	Agriculture	2	0.5
	Labour	93	24.9
	Nil	203	54.3
Employment	Employed	119	31.8
Income(rupees)	<10000	267	71.4
	10000-20,000	94	25.1
	>20,000	13	3.5
Education	Illiterate	159	42.5
	Primary	116	31.0
	Secondary	76	20.3
	Graduate	20	5.3
	Postgraduate	3	0.8

TABLE II: CHARACTERISTICS OF POISON USED

Patient history		Number	Percentage
Chemical taken	OPI	174	46.5
	Corrosive	52	13.9
	Drugs	87	23.3
	Others	61	16.3
Place of Incidence	Work place	32	8.6
	Home	295	78.9
	Others	47	12.5
Route of exposure	Oral	357	95.5
	Skin	6	1.6
	Inhalation	7	1.9
	Parenteral	4	1.1
Time of attempt	Day	222	59.4
	Night	152	40.6
Number of Chemical agents	Single	346	92.5
	Multiple	28	7.5

TABLE III: PATHOLOGICAL RISK FACTORS OF DELIBERATE SELF POISONING

Patients Characteristics		Number	Percentage
Psychiatric illness	Yes	61	16.3
Physical illness	Yes	15	4.0
History Suicide or Para suicide in family	Yes	5	1.3
History of drug abuse	Yes	129	34.5
Number of attempt	First	342	59.4
	Second	32	40.6

DISCUSSION

World Health Organization's define health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity which implies the importance of social and mental well-being to health.[4]

Self-poisoning is the most common form of self-harm followed by cutting. It one of the top five causes of acute medical admissions for both women and men. Most cases of deliberate self-poisoning present to general hospitals.[8]

Deliberate self-harm is a criminal offence as Islam prohibits suicide in any form. All suicide cases must be taken to government hospitals designated as medicolegal centres. In DSH cases most people avoid going to these centres because of fear of harassment by the police and social stigma attached to DSH.[7] Patients and attendants may thus ascribe DSP to accidental poisoning.[4] DSP is thus underreported.

In this study most of the cases belonged to the age group ranging between 15-24 years.

Voluntary intoxication as a form of attempted suicide is a significant problem among the young population. While mortality rate is high due to toxicity of the poisons used and poor medical care, the suicide intent is often far lower than for self-immolation and hanging.[13]

In developed countries suicide is also reported in the older population i.e above 60 years. Social isolation and lack of family integration have been implicated as a risk factor for this higher risk of suicide.[14]

Self-harming behavior is found to be linked to female gender, illiteracy, psychiatric disorders, physical or sexual abuse and lack of independent decision making.[9]

As reported in other studies more males attempted the

suicide as compared to females (61.5 % versus 38.5) reflecting the international trend of more younger men resorting to deliberate self-harm.

Newer studies are showing a preponderance of males attempting deliberate self-harm as compared to previous studies. Globalization and perhaps universal economic depression have led to this trend.

A study conducted at JPMC showed 100 patients out of 150 belonged to a low socioeconomic group.[15]

The social fabric of society worldwide is also unraveling so even the protective effect of our sociocultural and religious factors is getting weaker in face of this change.

Another study in Pakistan reveals female interpersonal conflict with opposite sex as the common precipitating cause. All cases of attempted suicide used oral route and the majority ingested insecticide.[16]

Organophosphate insecticides are the commonest suicidal agent in the developing countries like Pakistan.[17] Excessive use of pesticides, lack of enforcement of legislation, widespread ignorance of the risks involved, poor labeling and highly toxic products account for the increased risk of poisoning to both agricultural workers and general public in developing countries.[18] It has been established that non-pesticidal farming can lead to a reduction in deliberate self-poisoning in the community.[19]

Barbiturates and benzodiazepines are also commonly used because of their free availability. No problem is encountered buying these drugs over the counter. According to several studies the ingestion of high doses of benzodiazepine is the most common way of self-poisoning for suicidal attempts which accounts for 30-40% poisoning cases in developed countries.[12]

Paracetamol poisoning is not very common in Karachi because of availability of other more convenient alternatives or because of lack of knowledge about their toxicity. Traditional medicines are also a cause of intentional poisoning. As deliberate self-poisonings are mostly not premeditated any substance that is perceived as being toxic is used for the purpose of attempting suicide.Storage of chemicals in household is not carefully planned. Mostly these household chemicals, used as agents for deliberate self- poisoning, are corrosives.

Rampant use of morphine and morphine-derived substance abuse provides an easy outlet for the depressed addicts.

History of suicide or deliberate self-harm in the family or community also predisposes to attempts in other individuals. Media also plays a role as it may portray suicide in such a manner as to make it a desirable response to socially difficult situations. It may glorify the act for the helpless and confused people to consider this act in stressful times.[20]Irresponsible reporting of such incidents may lead to idealizing of DSH and suicide, making them acceptable coping behaviors in face of adverse conditions. Increasing use of internet has also led to a phenomenon which has acquired the name “cyber suicide”. [21]

There is a significant difference between married and single individuals regarding incidence of deliberate self-poisoning. About 67%, that is, more than 2/3 subjects in our study were unmarried. Marriage exerts a protective influence. Single people attempt suicide more than married individuals. Children may be the reason behind this protection, as having young children i.e. < 2 years of age exerted a significant protective effect in young females.[4, 22, 23] Strong family ties and relationships play an important role in prevention of suicide.

The unmarried male subjects in our study were the only, major or significant earning member of the family with either parents or siblings or both dependent on them. Conversely the proportion of married women committing suicide was significant indicating a subservient role in the family system. In Pakistan marital status does not play a protective role in females as observed in an Indian study which is different from the developed countries.[4]

Educational level had an effect on frequency of deliberate self-poisoning in our study as 42.5 % of our subjects were illiterate while 31 % had primary education. This negative effect of limited schooling in the young people related to the incidence of suicide has been attributed to their lower socioeconomic class or undiagnosed, untreated or under treated psychiatric illness in European studies.[23] Few predisposing factors have been studied in Pakistan. In Pakistani society social and economic discrimination predisposes to psychological distress and subsequent suicidal behavior.[12]

The place where the attempt was made was home 78.9 % of the time. A survey in USA showed that 90 % of adolescent suicide attempts occur at home and parents are at home 70% of the time.[24] Our results indicate that most of the subjects attempted parasuicide rather than suicide as the act was not premeditated. It was attempted at home so the chances of being found were better. The presence of parents, siblings or spouses made the act a cry for help or an attempt to influence someone by making them feel guilty or manipulating then to achieve one’s purpose, to reduce tension or to gain attention. The time of attempt was 60 % during daytime also indicating the low suicidal intent behind the act.

Repetition of the deliberate self-harm was observed in 8.5 % of the subjects. Reported rates of repetition of suicide vary between 15 and 25 % in the year after

the act. 3 –5 % of those who harm themselves die by suicide within 5 - 10 years.[13]

In this study history of psychiatric illness was present only in 16.8% of the subjects. This information was very reluctantly given, usually the relative gave us information about the symptoms or some subjects were undergoing psychiatric treatment. History of alcohol, intravenous drug abuse, or benzodiazepine or barbiturate drug abuse was present in some patients and this was also considered as a psychiatric illness. Another study conducted in Pakistan showed a high percentage depression in the deliberate self-harm group which is close to international studies. Young patients at risk often go unidentified; as a result their psychological problems may not be treated.[25]

There are significant regional differences as well as similarities of risk factors contributing to deliberate self -poisoning. Understanding these differences will lead to formulation of culturally sensitive prevention strategies.[4]

CONCLUSION

Deliberate self-poisoning is observed more commonly in young unmarried males belonging to low socioeconomic class. The commonest poisons used are organophosphate insecticides. The policies to reduce deliberate self-poisoning should be focused on the susceptible population.

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