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Original Article

Suicidal tendency through poisoning and its outcome among young population. An alarming mental health issue.

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Abstract:

Introduction: Among low-middle-income and underdeveloped countries of the world around 75% of overall mortality among the young population is through suicidal mechanisms. Mechanism of such acts varies among underdeveloped countries; one common mechanism is through intake of different poisons. Most of cases are not recorded properly and many of those people die before reaching hospitals and are never registered.

Objectives: To evaluate the frequency of suicidal acts among youth through different poisonous agents and their outcomes.

Methodology: This descriptive study was conducted at department of neurosurgery and Intensive care unit (ICU). Between January 2018 to June 2018, all cases of attempted suicide through ingestion of some poison, initially registered at accident and emergency department and later verified from medicolegal and intensive care unit were included for the current study.

Results: A total of 221 cases were reported, mostly from Hyderabad city. Rat killer poison, Black stones, and Organophosphate are most common poisons used for ingestion. Most case were registered during month of March and April. Black stone and organophosphate have higher mortality as compared to others. Domestic issues and broken relationships followed by poverty were the most prevailing cause of suicidal attempts. The incidence rate of suicidal attempts through poison ingestion in the Sindh youth population is 2.351 with a 0.030 mortality rate.

Conclusion: Collaborative efforts between nongovernmental organization, legislative bodies and designated medicolegal hospital having indigenous intensive care unit and neurosciences institute is needed if youth is to be salvage. Those survive needs prolong social support.

Keywords: Youth, Suicide, Poison, Organophosphorus

Introduction:

Among the young population, one of the leading factor of death is mental disorder especially after puberty; it is estimated that second most common cause of death in young females and third among the male population.[1-3] Among low-middle-income and underdeveloped countries of the world around 75% of overall mortality among the young population is through suicidal mechanisms.[4] Though the mechanism of such act varies among underdeveloped countries, one common mechanism is through intake of different poisons, This mechanism for committing suicide is not as common in well-developed societies as it is in low and middle-income societies.[5-7]

Despite the pattern of exposure to these poisonous agents, deliberation in the usage concerns higher mortality as compared to the other aspects of exposures, and this hike the suspicion of major concern in public health of developing nations.[8-11] Intentions of emotional expressions to others in disambiguate surroundings usually lead to an increase in the attempts of an incident with more preponderance to those who have less assurance to die.[12-14]

Among poisonous substances sodium hydroxide, rat killer poison, nitric acid, black stone, opioids, Phenol, drugs, organophosphate, parathion, malathion, carbamates, organochlorines endosulfan, endrin, parquet, and diquat are the common toxins consumed in developing nations for suicides.[15-25] Also such cases are not recorded properly and many of those people die before reaching hospitals and are never registered; in Pakistan the data of the most recent two-year analysis showed 306 identification of cases through newspaper hunt.[26] Pakistan a low middle income country with limited resources; is an Islamic country where suicidal act is prohibited Such act is a criminal offence under (PPC 309), hence data for such cases is very limited due to medico legal nature, as such cases requires intensive investigations through police for suicidal or para-suicidal attempt.[26] Most of these cases are even not reported and available data is very limited. National published data between 1964 to 2000 regarding suicidal and para-suicidal cases showed increased prevalence from 0.72 to 1.24/100000 from different mechanism.[27] The data from web site of world bank showed prevalence of 8.9/100000 during 2019[28]. However, poising as sole mechanism for suicide is lacking. Access to poisonous substances is unrestricted in Pakistan and these may be gotten without difficulty. This is in contrast to WHO recommendation that prohibit access to such poisonous substances. Application of WHO recommendation may help to reduce the prevalence of suicide.[29] Few studies reporting self-harming mental health disease and suicidal tendencies; instead of narrating factual data reported figures from newspaper which is less reliable.[30-32]

Objective:

To find out the actual frequency of suicidal cases reported among the young population.

Methodology:

This descriptive study was carried at Liaquat University Hospital, a 1450 bedded hospital with 30 bedded intensive care unit, during January 2018 to June 2018. Non probability consecutive sampling used and only suicidal cases where poison substance is used were included. Cases of suicide, having co-morbidities and where mechanism used other than poisonous substance were excluded. Cases included were followed through from accident and emergency department to intensive care unit. The city of residence, general condition, symptoms, during of incidence, nature of poisonous substance used and outcome were recorded over the proforma. Collected data was analyzed using SPPS and presented as table and graphs.

Results:

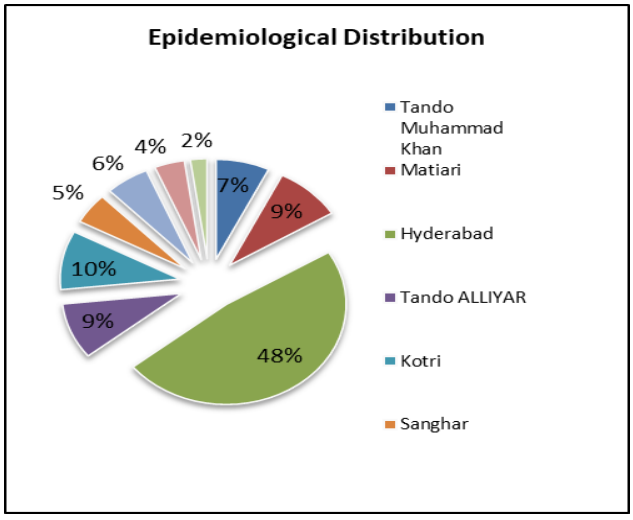
Tally of cases in this study was 221, with females outnumbers males. The frequency of cases during different months of study period with gender distribution is shown in table no 1.

Table No 1: Frequency of cases.

Gender	Jan	Feb	Mar	April	May	June	Total
Male	18	12	20	17	28	10	105
Female	23	17	20	23	19	14	116
Total	**41**	**29**	**40**	**40**	**47**	**24**	**221**

As Liaquat University Hospital is a tertiary care hospital, cases are referred form all cities of the Sindh. Most cases were reported from Hyderabad; number of cases referred from other cities of the Sindh province is shown in fig no 1.

Fig No 1: City wise distribution of cases.



Majority of cases (45%) were reported from Hyderabad, while least number of cases (2%) were reported from Thatta. Although various poisonous substances used to

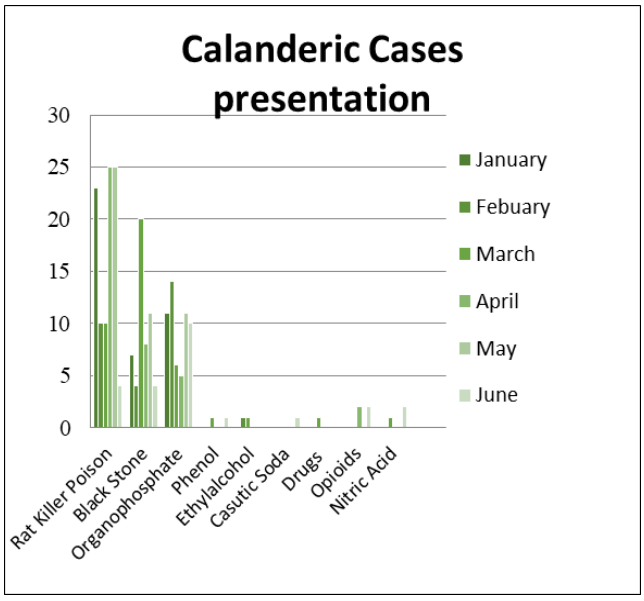
attempt suicides; most common was rat killer. This probably reflect easy availably of the substance. Frequency of different substances used are shown in table no 2.

Table No 2: Frequency of poisonous substances used

Poisonous agents	Number of cases
Rat killer Poison	97
Black stone	54
Organophosphate	57
Phenol	2
Ethyl Alcohol	2
Sodium hydroxide	1
Opioids	4
Drugs	1
Nitric acid	3
Total	221

The frequency with different poisonous substances used during period of study is shown in fig 2.

Fig No 2: Frequency of different poison used



Among all poisonous substances used for suicide purpose, commonest were black stone, rat killer poison, and organophosphate compounds. Used of these poisonous substances by residents of different city is shown graphically in fig 3. Liaquat university hospital situated at Hyderabad city, 2nd largest city of Sindh province and therefore not surprisingly most cases were from Hyderabad. Attempt to suicide is done under different situation and underlying cause is different. Factors that lead to such heinous acts and correlation with frequency of cases are given in table no 3.

Fig No 3: Distribution of poison with respect to city of residence.

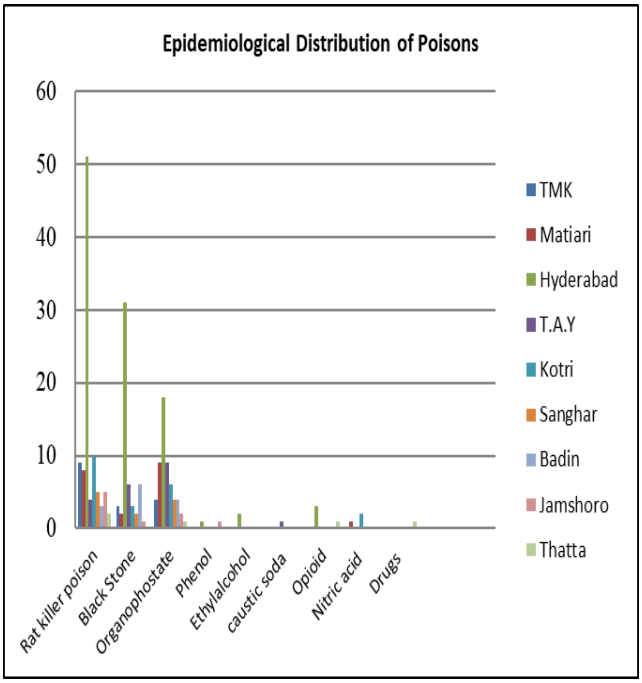


Table No 3: Underlying cause as reported

Factors Reported	No of cases
Domestic problems	71
Break ups	76
Poverty	36
Family Pressures	23
Others	15

As per questionnaire and nature of the current study the factors found were not deeply assessed and questions as how gloomy was the condition that led to suicidal attempt cannot be narrated. Yet domestic/family issues found the most prevalent underlying cause. Breakup, include, betrayal from loved ones, cheating was found as the 2nd common factor. Few attendants/ patients did not, fairly, described events leading to this act and did not gave clear history; instead describing different and conflicting stories.

Although suicidal attempt was successful in only 29 cases; yet the resulting morbidity was more prevalent (n=192, 86.87%). The highest mortality (25.92%) found

after ingestion of black stone (paraphenylenediamine) followed next in frequency after ingestion of organophosphorus (17.54%). The rat killer ingestion was the most common poisonous substance ingested; however, most cases were salvaged and mortality seen in 2 (2.06%) cases as shown in table no 4.

Table No 4: Morbidity and Mortality

Poisonous Ingredient	No of Cases	Morbidity	Mortality
Rat killer poison	97	95	2
Black stone	54	40	14
Organo-phosphate	57	47	10
Phenol	2	2	-
Ethyl Alcohol	2	1	1
Drugs	1	1	-
Caustic Soda	1	1	-
Nitric acid	3	2	1
Opioids	4	3	1
Total	**221**	**192**	**29**

Morbidity includes prolonged hospital stay, anxiety and depression and post-traumatic stress syndrome. Highest morbidity seen with rat killer poison followed by organophosphorus compounds and black stone in that order.

Due to lack of significant data, young adolescent data in Hyderabad division is obscured, hence incidence rate taken from reference of Sindh Youth policy Synopsis33 is taken which describes youth population as 9398935.[33]

Incidence Rate:

Data:

Numerator: 221 new cases of Suicidal attempts

Denominator: 9398935

10n = 100,000

Calculation: = (221 / 9398935) x 100,000 = 2.351 new cases in 100,000 Population

The incidence rate calculated using above data for suicidal tendency is 2.351 new cases in 100,000 Sindh populations.

Mortality Rate:

Data: Numerator: 29

Denominator: 9398935

10n= 10,000

Calculation: = (29/9398935) x 10,000 = 0.030

Hence rate of mortality secondary to suicidal tendencies by mechanism of poisoning only turns to be 0.030 deaths/ year.

Discussion:

The recent trend of secularism in society has led to an increase in the level of suicidal attempts even in Islamic states, where once suicidal acts were not even considered in thought.[34] Among young population; because of the inability to properly confront the situation, anger, attempts to speed for overproduction, competition with oneself, introverted nature of many people, youth may not express correctly, Consequently they keep such ideas to themselves. When these ideas does not work, the situation worsens as there is no window to display such toxicity within oneself[1]. These ideas are then expressed as violent behavior; and such person basically consider it only a way of describing.

Probably for this reason self-harm and suicidal thoughts and attempts among teenagers are becoming more prevalent.

In a low-income country with weak implementation of laws, poisonous substances like rat poison, black stone, and organophosphate are easily accessible approaching such notorious products is much easier leading to such acts with easiness to perform and to liberate themselves from situation despite the firm and strong religious believes, another and more common factor is depression, which seems to be major factor for mental disturbance among youth.[1, 27, 35] In contrast, factors responsible for such act among high-income countries are reportedly bullying, physical, sexual abuse, depression, drug intoxication, poor relationships among peers.[36-41] In contrast to developing nations with different reasons for such acts, developed countries have many different factors like loneliness , to perform more good in society, self-centered environment with lacking guidance from parents mostly, but their study sample conflicts with geographical distribution and lack of temporal sequence.[28] In our study the factors which presented needed to be more strongly studied and further studies are needed to understand problem more better in different dimesions.

Black stone (Kala Pathar) in current study showed highest mortality and morbidity, Because of such vast numbers of cases in such short duration study with that much morbidity and mortality prevails more work to be done as data regarding current factors is not sufficient and mostly such cases report in low middle in countries.[15, 42] those who survive such events develop some form of anxiety or depression with many systemic problems like renal problems airway problems most severe being laryngeal edema and spasm leading to fatality and such problems may increase in life of such patients who escape initial period and follow different mental health and systemic health issues. Also higher incidence of metabolic disorder, systemic inflammation, and early signs of senescence with violent behavior, unemployment, welfare dependence, high level of loneliness and dissatisfaction and these factors usually persist even after the control of suicide attempts in late tenure of life.[43-46]

As factors detailed in current study are not strongly related to suicidal attempts mentioned above; reason being that data for current study based upon what is reported in the hospital. Being a nation with Islamic culture such cases are at rise and warrant alarms to assess mental health disturbances in young population which is a leading factor for such ideation and acts, during current six-month study incidence was 2.357 cases with is highly significant number. The number of cases in our study and incidence is more than quoted in previous studies.[26,27,30,31] These facts raise query to responsible authorities, stack holders which seemed to be un aware of facts and figures.

Conclusion:

Strong, multidiscipline approach is required to calculate exact data and to counter identified issues. Timely identification of underlying cause is of prime importance and for this purpose non-governmental organization may be encourage to work on this issue.

Conflict of interest: Authors declare no conflict of interest.

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