DOI: https://doi.org/10.54393/pjhs.v5i09.2222

PAKISTAN JOURNAL OF HEALTH SCIENCES
(LAHORE)
https://thejas.com.pk/index.php/pjhs
ISSN (P): 2790-9352, (E): 2790-9344
Volume 5, Issue 9 (September 2024)

Original Article

OPEN ACCESS

Suicidal Deaths by Poisoning in Muzaffargarh: Observational Study Comprising of Regional Toxicity Patterns of Acute Poisoning in Cases of Suicidal Deaths in Muzaffargarh

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ARTICLE INFO

Keywords:
Suicidal Deaths, Poisoning, Muzaffargarh, Toxicology

How to Cite:
Sana, S. G., Hafeez, H., Shahab, M. A., Muraad, T., Masood, R., & Niazi, S. H. (2024). Suicidal Deaths by Poisoning in Muzaffargarh: Observational Study Comprising of Regional Toxicity Patterns of Acute Poisoning in Cases of Suicidal Deaths in Muzaffargarh: Regional Toxicity Patterns of Acute Poisoning in Cases of Suicidal Deaths in Muzaffargarh. Pakistan Journal of Health Sciences (Lahore), 5(09). https://doi.org/10.54393/pjhs.v5i09.2222

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Received Date: 10th August, 2024
Acceptance Date: 26th September, 2024
Published Date: 30th September, 2024

ABSTRACT

Cases of suicidal deaths are increasing day by day and one of the main reasons is acute poisoning, which is the preferred method of suicide in many areas. The increasing number of deaths led us to conduct a study on this particular aspect. **Objectives:** To determine the frequency of toxic agents used for poisoning, regional trends of availability, modes and methods of use and reasons for self-poisoning. **Methods:** In this retrospective study, dead bodies of both genders and all age groups were studied with their respective data and history, for the years of 2019 to 2023. Unidentified, burnt, putrefied and bodies of chronic narcotic abuse were excluded. All the variables were analyzed through SPSS version 27.0. **Results:** Out of 387 cases of suicidal deaths due to poisoning, 67% were females with the predominant age group of 21 to 40 years. The majority were married and belonged to rural areas of Muzaffargarh with illiteracy levels up to 75%. The widely used poisonous agents were Kala Pathar, Wheat pills and Organophosphorus. Almost 61.7% of families did not allow postmortem of the deceased. **Conclusions:** It was concluded that suicidal deaths due to poisoning are soaring day by day due to the lack of proper legislation, suicide prevention strategies and provision of health facilities for the people of district Muzaffargarh.

INTRODUCTION

The Silent Suicide problem is happening every second of day globally and it affects mostly underdeveloped countries like Pakistan. Suicide is a phenomenon, it's not just a time act, it has a series of psychological, emotional, and physical milestones that a person encounters and surpasses to finish his /her life. In terms of Forensic Medicine, Suicide is an act of taking one's own life voluntarily and intentionally. The term Attempted Suicide is used when a person attempts to take his/her life or has the tendency to take his/her life. Partial Suicide is another form of suicide in which a person is involved in self-mutilation. Chronic Suicide is used for habitual behaviour patterns that are injurious to life and can ultimately lead to the death of the person. There are various methods used for suicide, like hanging, intoxication, cutting of radial artery, drowning in water, and firearms, but the most common form of suicide

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prevailing in Pakistan is done by self-poisoning. Poison is a substance that can be a solid, liquid or gas, that when introduced into the body via ingestion, inhalation or dermal contact can produce harmful effects and can lead to death. Acute Poisoning is the major route of suicidal deaths in Pakistan. It is the reason for frequent emergency visits of victims and the leading cause of death across the country. World Health Organization (WHO) estimated in 2021 almost 703,000 suicidal deaths per year globally, of which 77 percent were recorded in underdeveloped countries [1]. In Pakistan, 8.9 suicides occurred per 100,000 people in 2019 [2]. It is estimated that around 20 percent of global suicides are due to pesticide self-poisoning, most of which occur in rural agricultural areas of underdeveloped countries like Pakistan. According to a study in Pakistan, from 2000 to 2021, the rate of suicide increased by 36 percent and it accounts for 48,183 deaths which is equivalent to almost 1 death every 11 minutes [3]. Suicide due to poisoning is very common all over the world and it used to be a common practice for ages. Unnatural deaths caused by poisoning ranks 2nd after Road Traffic Accidents all over the world [4]. There are a variety of chemical substances used for poisoning. An ideal suicidal poison has many qualities that make it feasible for people to go for, like; its availability, cost, tastelessness, no aroma, high toxicity, less time to act, easily mixed in food or drinks, and capability to produce painless death. It can be derived that there are many factors involved in cases of suicidal poisons. Keeping in view the fact that Pakistan is an agricultural country, the common suicidal poisons, that fulfil all criteria for being ideal suicidal poisons, are organophosphorus, black stone and wheat pill. Organophosphorus is most common in south Punjab and interior Sindh. In north Punjab, the common agent is Aluminum Sulfide, also known as a wheat pill. Another agent is Para Phenylene diamine also called Kala Pathar, which is also commonly used in south Punjab. Other agents like rat poison, kerosene oil, benzodiazepines and other household products are also used. Variation in clinical presentation in self-poisoning cases depends upon factors like; age group, gender, reason for suicide, geography and economy. The majority of cases of suicide involve the age group of 20 to 39 years. Females are affected more than males. Domestic issues like marital conflicts and depression due to economic reasons are the main factors. Rural areas have the predominance of such cases where pesticides are easily accessible [5]. In this 5 years observational study for the years 2019 to 2023, rising cases of suicide by poisoning came into the spotlight, as the district of Muzaffargarh still lacks basic health facilities, psychosocial education and rehabilitation and a lack of proper legislation about suicide. In the 2023 census, the total population of Muzaffargarh is 5,015,325 [6]. The district comprises agricultural and industrial areas with a majority of rural areas and a low literacy rate. This neglected region of the country is the major source of wheat and cotton production, still lacks advanced health facilities and is deprived of psychosocial awareness. The rationale of this study is to converge attention towards the formulation of Regional Suicide Prevention Strategy Programs and proper Suicide Legislation.

This study aims to determine the frequency of toxic agents used for poisoning, regional trends of availability, modes and methods of use and reasons for self-poisoning at the district level.

METHODS

After receiving ethical approval from the concerned authority (ref no: 437/24) study was conducted at District Headquarters Hospital (DHQ) Muzaffargarh for the years 2019 to 2023. Dead bodies of suspected acute poisoning cases for autopsy of both genders and all age groups were studied. Bodies with a chronic history of narcotic abuse, putrefied bodies or burned bodies and unidentified bodies without any hospital record were excluded. Retrospective data records were taken from the hospital and studied according to the variables required. Those variables were collected and analyzed through the latest version of SPSS 27.0. The statistical analysis of data was carried out using tables, graphs and percentages.

RESULTS

According to this study, out of 387 suicidal cases due to poisoning, a large number of the female population is involved, almost 67% and the most affected group is from the ages of 21 to 30 years, that is 41.6%. The second most happening age group is 31 to 40 years which is 28.16%. The majority of the cases are of people who were married which is 48.3%. But there are also a considerable number of divorced people who committed suicide, which is about 12.14%. The majority of the cases are from rural areas of Muzaffargarh, almost 61.5% which includes the highest number of people that belong to the combined family system which is 74.6%. Almost 33.3% are housewives and 24.03% are domestic workers of both genders. Labourers comprise 19.89% and 19.6% are unemployed. The illiteracy level reaches the highest degree by covering about 75.2% of the population in various areas of Muzaffargarh. Out of a total of 387 cases, only 20.15% of people have education under matric. 52.97% of people committed suicide at their homes. When inquired a little further, the majority of the reasons fall under 4 major categories that have almost equal prevalence; 31.26% and 30.74% go for financial and marital issues respectively, 22.4% and 15.5% for family and relationship issues respectively. In the majority of the cases, 61.7% of families didn't allow for autopsy of dead bodies to be done (Table 1).

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Table 1: Frequency and Percentage of Different Variables

Parameters	Subcategory of Parameters	Frequency (%)
Gender	Male	130 (33)
	Female	257 (67)
Age (Years)	10-20	67 (17.3)
	21-30	161 (41.6)
	31-40	109 (28.16)
	41-50	48 (12.4)
	51-60	2 (0.51)
Marital Status	Married	187 (48.3)
	Unmarried	153 (39.5)
	Divorced	47 (12.41)
Locality	Urban	149 (38.5)
	Rural	238 (61.5)
Family Setup	Single Unit	98 (25.32)
	Joint System	289 (74.6)
Occupation	Unemployed	76 (19.6)
	Housewife Domestic	129 (33.34)
	Worker Laborer	93 (24.03)
	Employed	77 (19.89)
Literacy Level	Under Matric	291 (75.2)
	Undergraduate	78 (20.15)
	Graduate	11 (2.84)
	Postgraduate	5 (1.3)
Location of Consumption of Poison	Home	205 (52.97)
	Workplace	149 (38.5)
	Others	33 (8.5)
Reason of Suicide	Family Issues	87 (22.4)
	Marital Problems	119 (30.74)
	Financial Issues	121 (31.26)
	Relationship Failures	60 (15.5)
Poison Used for Suicide	Organophosphorus Wheat Pill	77 (19.8)
	Kala Pathar	89 (22.9)
	Bleach/Detergent	149 (38.5)
	Rat Poison Insect	24 (6.2)
	Killing	29 (7.5)
	Powder/Spray	19 (4.9)
Autopsy Done	Yes	148 (38.2)
	No	239 (61.7)

The most prevalent poison found was Kala Pathar, almost 38.5%. Other common poisons are also widely used among citizens like rat poison, bleach and insecticides, having 7.5%, 6.2% and 4.9% respectively. The second most common was Wheat Pill with a percentage of 22.9. Organophosphorus was marked to be in third place securing almost 19.8% (Figure 1).

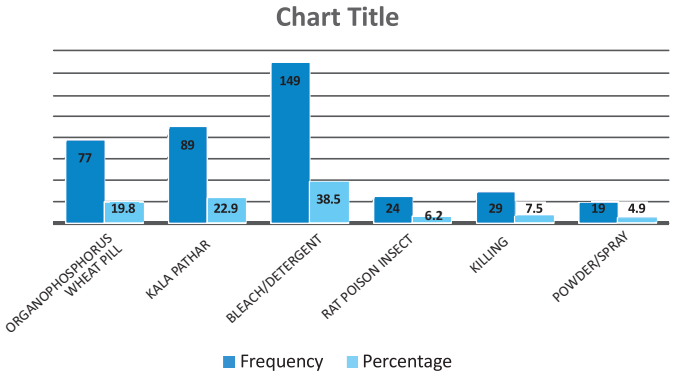

Figure 1: Poisons Used by the Suicide Victims

DISCUSSION

In this five-year study, a total of 387 suicide cases of self-poisoning are encountered. This is not a normal number, it's huge, and it's a huge proportion of the population of a single district that is harmed. All over Pakistan, such an issue is already under constructive work, for the benefit of the general population. Many significant studies demonstrate factual data of prime importance all over Pakistan, which supplement this particular study as a whole, like; in Bahawalpur, the most common poison is organophosphorus (20%) [7]. Another study from Sindh shows that organophosphorus is the main agent of choice for suicide and married people take the lead in that particular area [8]. According to a study conducted in Karachi, young female victims outnumbered males regarding suicide through self-poisoning [9]. Another research study concluded that wheat pills are widely used poisoning agents, especially in the agricultural lands of Pakistan [10]. Complementing the results of this research piece, another study implied that young females are mostly affected and the choice of agent was mostly kala pathar for the south Punjab areas [11]. Moving to another study, it demonstrate that suicidal deaths are rising day by day in Pakistan and the method of choice is self-poisoning for the majority of people [12, 13]. In compliance with one research study in Hyderabad reflected that kala pathar, organophosphorus and rat poison are the chief suicidal agents used by victims of suicidal deaths in cases of self-poisoning [14]. A similar study conducted in Sindh shows that uneducated and jobless people have a greater number of cases of suicide through self-poisoning. [15]. According to research conducted in Khyber Pakhtunkhwa, the suicide death scale is on the rise and one of the main reasons is domestic violence and marital abuse [16]. Suicide is a social dilemma, it has become a sensitive and imperative anthropological, psychological and public health issue, which needs to be tackled as soon as possible [17]. Middle and Lower-Income countries like Pakistan lack a proper systematized National Suicide Prevention Program and it has to be introduced in our society to benefit the local population [18]. In conformity with another study, pesticide self-poisoning has become the second most common suicidal method in underdeveloped countries like Pakistan

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[19]. Under the fact that Pakistan is the fifth most populated country globally and the second most populous country in Southeast East Asia, the most prevalent suicidal deaths are due to self-poisoning in married women, because they suffer psychological and emotional traumas in their married life [20, 21] data collected in Chitral, low socioeconomic background and burden of responsibilities for extended family setup on women leads to their death every month in last 5 years in Chitral [22]. Another common factor regarding suicidal deaths, the majority of the young women in extended family systems with high illiteracy rates, never discuss their intent to suicide, which leads to never never-ending vicious circle of mortality passed onto generations [23]. But melancholy is the fact that there are no official suicide reporting guidelines available, which leads to ignorance on the part of health care and the government [24]. The need of the hour is not only to visualize the problem but also to implement solutions in the form of generating suicide prevention strategies so that many precious lives can be saved [25].

CONCLUSIONS

It was concluded that suicidal deaths due to poisoning are expanding day by day in many prime areas of Pakistan and Muzaffargarh is one of them, which is highly neglected in terms of proper legislation, psychosocial education programs, suicide prevention strategies, literacy level, awareness programs for the general population and advanced treatment facilities. It is highly recommended to properly plan out the structural and systematized method of suicide prevention for the benefit of the long-neglected population of Muzaffargarh.

Authors Contribution

Conceptualization: SGS
Methodology: SGS, SHN
Formal analysis: HH, TM, RM
Writing review and editing: SGS, MAS

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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