ORIGINAL ARTICLE

Epidemiology of suicide: Autopsy audit of five years in an industrial city of Punjab.

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ABSTRACT… Objective: To determine the epidemiological pattern of suicidal deaths in an industrial city of Punjab Province over a period of five years as well as to determine the gender and age group mostly affected. **Study Design:** Retrospective Cross-sectional Descriptive study. **Setting:** Department of Forensic Medicine and Toxicology, Punjab Medical College, Faisalabad. **Period:** 1st January 2019 to 31st December 2023. **Methods:** Subjects of the study were victims of suicidal death in areas covered by Police stations where the postmortem was performed in the Mortuary of Punjab Medical College / Faisalabad Medical University. Data was collected from respective official Police records, FIRs and Postmortem reports and recorded on pre-structured proformas. It was categorized on the basis of manner of death, type of weapon, gender and age groups involved. **Results:** A total of 1329 autopsies were conducted during the Five-year time period from 2019 to 2023 in which 82 cases (6.17%) were labelled as Suicide on Autopsy and Police inquest. The highest percentage of suicides was recorded in year 2020 with 19 out of 254 cases (7.48%). Among the suicidal cases, 81.7% were males predominantly in the age group 20-29 years. It was found that 57.3% cases were reported from the rural areas. Hanging accounted for 65.8% of suicidal deaths making it the major method employed to commit suicide. **Conclusion:** Our study concluded that 6.71% cases of suicide were reported among all autopsy cases during the five-year time period of 2019-2023. Among these, young males in age group 20-29 years from rural areas were in majority and hanging was the most common method of suicide employed.

Key words: Autopsy, Manner of Death, Suicide, Unnatural Deaths.

INTRODUCTION

World Health Organization has recognized Suicide as an issue of Public Health concern and urges the member states to bring down the incidence of suicides and self-inflicted injuries through cohesive approach.[1] Suicide is the manner of death in which someone injures oneself with an intention to end life.[2] The incidence rates for suicide have shown a steep upwards trend during the last two decades i.e. from 2000 to 2021. Data from the Centre for disease prevention and control (CDC) states that 48,000 people committed suicide in year 2021 in United States, that makes around one suicide every 11 minutes[2]. South East Asia, a thickly populated region has very high suicide rates. Iran has reported the incidence of suicidal deaths to range from 2.2 to 19.3 per 100,000 population in different areas of the country.[4] In 2019, the burden of suicides was around 14 per 100,000 population in India.[5] These statistics strengthen the previous observations that two thirds of all suicides occur in Low- and middle-income countries. A recently published study revealed that 2295 suicides were reported during a two-year period (2019,2020) in Pakistan.[6]

Suicide is an extremely unfortunate event with multifaceted roots. The probable causes include physical and mental illnesses, disturbed relations, economic crises.[7] However, the psychosocial factors are the most prominent ones. It has been reported that around 90% of suicide committing individuals have an underlying mental disorder like Depressive illnesses, Bipolar disorder etc.[8]

Age and gender distribution of suicidal victims and the method of suicide varies between regions

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and countries. Among the 15-29 years old age group, suicide was the fourth leading cause of death in 2019. In most of low- and middle-income countries, pesticide self-poisoning is responsible for 20% of suicides.[9]

Epidemiological assessment of suicides in any country or region is essential to prevent this unnatural and avoidable death of an individual. Preventive interventions can be more targeted and successful if suicidal data is appropriately collected and analyzed as it will yield information regarding high-risk gender, age groups and commonly employed methods.

METHODS

This Retrospective cross-sectional descriptive study was conducted at Department of Forensic Medicine and Toxicology, Punjab Medical College, Faisalabad, from 1st January 2019 to 31st December 2023. After obtaining permission from the relevant authorities and approval from ethical committee (48-ERC/FMU/2022-23/358/29-22-23), data of victims of suicidal deaths in areas covered by Police stations where the postmortem was performed in the Mortuary of Punjab Medical College /Faisalabad Medical University was collected from respective official Police records, FIRs and Postmortem reports and recorded on pre-structured proformas. It was categorized on the basis of age groups involved, gender, method of suicide employed and where the case was from an urban or rural area.

Sample Size

The sample size was 82 suicidal cases over a 5-year span from a total of 1329 autopsy cases.

Inclusion Criteria
- Both genders.
- All age groups.
- From the area of Police stations under the Department of Forensic Medicine, Punjab Medical college, Faisalabad.

Exclusion Criteria
- Individuals killed in Police encounters.
- Individuals who were murdered or died accidentally.

Data Analysis

SPSS version 12.0 was used to analyze the collected data.

RESULTS

A total of 1329 autopsies were conducted during this time period and 82 cases (6.17%) were labelled as Suicide on Autopsy and Police inquest. The highest percentage of suicides was recorded in year 2020 as 7.48% (Table-I)
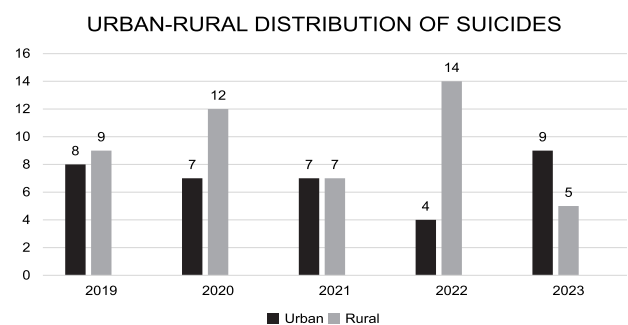
Year	No of Cases	Total Autopsies	Percentage
2019	17	256	6.64%
2020	19	254	7.48%
2021	14	288	4.86%
2022	18	294	6.12%
2023	14	237	5.90%

Table-I. Distribution of suicides among autopsies from 2019-2023

Among these 82 cases, 67 (81.7%) were males and 15(18.3%) were females making a 4.5:1 ratio (Table-II)

Majority of the victims of suicide were of the age group 20-29 years amounting to 32 (39%) cases of the total followed by the 50 and above age group with 13 (15.8%) cases. (Table-III).

It was found that 47 (57.3%) cases reported from the rural areas while 35 (42.7%) cases were from urban areas. (Figure-1)

URBAN-RURAL DISTRIBUTION OF SUICIDES

Figure-1. Urban rural distribution of suicides in Faisalabad.

As far as the method employed for suicide was concerned, hanging was the most commonly used method in 65.8% (54) cases. This was followed by suicide with firearm accounting for 25.6% (21) cases. Other methods used included Poisoning, Burns and Sharp weapons. (Table-IV)

Gender	2019	2020	2021	2022	2023	Total	%age
Male	13	16	12	14	12	67	81.7
Females	04	03	02	04	02	15	18.3
Total	17	19	14	18	14	82	100

Table-II. Gender distribution of suicides

Age Groups (Years)	2019	2020	2021	2022	2023	Total	%age
0-9	0	0	1	0	0	1	1.2
10-19	1	3	2	5	1	12	14.6
20-29	9	9	4	3	7	32	39
30-39	3	3	6	4	0	16	19.5
40-49	0	2	0	4	2	8	9.7
50 and above	4	2	1	2	4	13	15.8
Total	17	19	14	18	14	82	100%

Table-III. Age distribution of suicidal deaths.

Method of Suicide	2019	2020	2021	2022	2023	Total	Percentage
Poison	01	00	00	01	00	02	2.4
Firearm	03	03	06	03	06	21	25.6
Burn	01	02	00	00	01	04	4.87
Hanging	12	14	8	13	07	54	65.8
Sharp weapon	00	00	00	01	00	01	1.2
Total	17	19	14	18	14	82	100%

Table-IV. Distribution of methods used for suicide.

DISCUSSION

This study aimed to analyze the autopsy data of 82 suicidal cases that presented to Forensic Medicine department of a Public Sector university in an Industrial city of Punjab over a span of Five years. It is very important to determine the epidemiological patterns of Suicide in order to design effective strategies for its prevention.

Our study demonstrated that 6.17% of all 1329 autopsies conducted during 2019-2023 were labelled as suicidal deaths. This is in close proximity with the statistics of an Indian study which revealed that 5.64% of all autopsy cases were suicides, which is a significantly high proportion.[10] This observation is in line with the WHO statistics that burden of suicidal deaths is high in Low and Middle income countries.[9] Regarding age distribution, our study revealed that majority suicides occurred in the young age group i.e 20-29 years of age. Similar observations were presented by an autopsy-based study from Bangladesh, where predominant age group was 11-30 years with highest percentage of 35.29% in age group 21-30.[11] Pakistan and Bangladesh are neighboring countries with high population density. Both these countries are passing through demographic transition where bulk of population is in young age group[6] which is also emotionally unstable, hence high burden of suicidal deaths in young age group can be attributed to this feature. In our study 81.7% of suicidal cases were males, which is another important finding. According to Barman et al, males are more prone to commit suicide as shown by their study which explored the autopsy data of a tertiary set up in India.[10] Regarding Urban Rural distribution of suicidal cases, we didn't find much variation but rural cases were slightly more than urban accounting for 57.3%. A literature review also presented the same findings with rural predominance and in some countries, there was not much difference.[12] Means of Suicide employed is a very important parameter which should be explored adequately. In our study, hanging was the most commonly employed means accounting for 65.8% (54). It was followed by Firearm used by 21 (25.6%) individuals. Vikas Arya et al scrutinized the data from 2014-2021 and depicted hanging as the most commonly employed method for suicide followed by poisoning.[13] However in an Iranian study, Poisoning came out to be the most

commonly employed method.[14] Hence, the method of suicide depends on a number of factor such as area, cause, availability and sociocultural factors. It is imperative to analyze the data on regular basis so as to ascertain the epidemiology and methods of suicide in order to formulate a strong preventive strategy.

Our study can facilitate policy makers in making evidence-based decisions for Prevention of suicides. This unfortunate event which affects our younger population predominantly should be addressed diligently by analyzing data and observing epidemiological features.

CONCLUSION
Our study concludes that 6.71% cases of suicide were reported among all autopsy cases during five-year time period of 2019-2023 in Faisalabad, Punjab. Among these, young males in age group 20-29 years from rural areas were in majority and hanging was the most common method of suicide employed.

Our study can facilitate policy makers in making evidence-based decisions for Prevention of suicides. This unfortunate event which affects our younger population predominantly should be addressed diligently by analyzing data and observing epidemiological features.

CONFLICT OF INTEREST
The authors declare no conflict of interest.

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2	Mobin Inam Pal	Critical revision of manuscript, Conception of idea.	
3	Sana Iftikhar	Main author, Literature review, Statistical analysis.	
4	Bilal Ahmed	Tabulation, Literature review.	
5	Sajjad Ahmed	Proof reading, Literature search.	
6	Anam Azam Randhawa	Proof reading, Discussion write up.	
7	Fozia Zahur Malik	Data analysis, Literature review.	