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**Tendency of unnatural deaths in Faisalabad city during 2023- a retrospective study**

Mobin Inam Pal <sup>a</sup>, Kishwar Naheed <sup>a</sup>, Ummara Munir <sup>b</sup>, Abdul Samad <sup>c</sup>, Qurrat Ul Ain Kamran <sup>d</sup>, Muhammad Iqbal Ghani <sup>e</sup>

<sup>a</sup> Associate Professor, Department of Forensic Medicine & Toxicology, Faisalabad Medical University/ Punjab Medical College, Faisalabad.

<sup>b</sup> Associate Professor, Department of Forensic Medicine & Toxicology, Sheikh Zayed Medical College, Rahim Yar Khan.

<sup>c</sup> Associate Professor, Department of Forensic Medicine & Toxicology, Liaquat University of Medical & Health Sciences, Jamshoro Sindh.

<sup>d</sup> Assistant Professor, Department of Forensic Medicine & Toxicology, Sheikh Zayed Medical College, Rahim yar Khan.

<sup>e</sup> Assistant Professor, Department of Forensic Medicine & Toxicology, Continental Medical College, Lahore.

Correspondence: \*[mobdepal05@gmail.com](mailto:mobdepal05@gmail.com)

**ABSTRACT**

**BACKGROUND & OBJECTIVE:** Unnatural deaths reflect the social and mental setup of a society. The objective was to assess the trend of unnatural deaths in Faisalabad during the year 2023 and determine the gender and age group mostly affected and the means employed.

**METHODOLOGY:** This cross-sectional descriptive study was carried out in the Department of Forensic Medicine and Toxicology, Punjab Medical College, Faisalabad, from the data of all victims of unnatural deaths from 1st January 2023 to 31st December 2023. Data was collected from respective official Police and post-mortem reports and recorded on pre-structured proformas and categorized based on the manner of death, type of weapon, age groups involved, and gender.

**RESULTS:** Out of a total of 266 autopsies, 227 were males and 39 females (5.8:1). Majority of the victims belonged to the 30-39 -year age group i.e. 100 (37.6%) followed by the 20-29-year age group with 49 (18.4%) cases. The manner of death was homicidal in 198 (74.4%) cases followed by 46 (17.3%) accidental and 14 (5.3%) suicide while the manner of death remained undetermined in 5 (1.8%) cases. Firearms claimed 116 (43.6%) lives followed by poisoning (61,22.9%) cases. October experienced the maximum number of cases (30,11.3%).

**CONCLUSION:** Males are the major victims of unnatural deaths especially individuals in the middle age group. Firearm weapons are the major weapon of assault due to their easy availability. There is a dire need for strict implementation of laws on buying and possession of firearms.

**KEYWORDS:** Autopsy, Firearms, Homicide, Poisoning.

**INTRODUCTION**

It is clearly stated in the Quran that ‘Surely we belong to Allah and Him we shall return’<sup>[1]</sup>. Life is a blessing of the Almighty but it has to come to an end. For the majority of the population, life takes its normal course and culminates in death from old age or disease while the remaining may reach a sudden tragic end in accidents, may be murdered, or commit suicide out of frustration with the course of events of their life.

A medicolegal autopsy should be carried out in all cases of unnatural deaths. According to Naseeb R. Awan, forensic/ medicolegal autopsies are performed in the pursuance of law to establish the cause and manner of death and also to rule out foul play in cases of deaths due to criminal assault,

poisoning, and transportation or industrial accidents <sup>[2]</sup>. It should be performed with precision and thoroughness <sup>[3]</sup>. An autopsy involves opening all three cavities of the body which include the cranial cavity, thoracic and abdominal cavities.

Unnatural deaths may be characterized as homicidal, suicidal, or accidental, which is also termed the “manner of death”. Several unnatural deaths also remain undetermined as toxicological testing and meticulous autopsy fail to pinpoint a cause of death <sup>[4]</sup>.

The prevalence of unnatural deaths reflects the violent impression of society <sup>[5]</sup> and has a long-lasting and negative effect on society as a whole and the family members individually <sup>[6]</sup>.

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The objective of the study was to assess the trend of unnatural deaths in Faisalabad during the year 2023 and determine the gender and age group mostly affected and the means employed.

## METHODOLOGY

This cross-sectional descriptive study was conducted at the Department of Forensic Medicine and Toxicology, Punjab Medical College, Faisalabad, after approval by the Institutional ethical committee vide letter 48-ERC/FMU/2023-24/421 dated 04-05-2024. The autopsy data from 1st January 2023 to 31st December 2023 was analyzed.

After obtaining permission from the relevant authorities, data on victims of unnatural death 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 based on the type of weapon involved, age groups involved, gender, and month-wise number of cases.

The sample size was 266 cases over one year. The convenient sampling technique was used for the collection of data. The sample size for this study was determined using an epi calculator ( $n = p(1-p) z^2/e^2$ ). The primary outcome measure/frequency of variable of interest i.e. firearm cases is 23.1% with reference to a published study [7].

Therefore, a minimum sample size of 266 subjects was required to detect a significant result with a confidence level of 95% and a 5% margin of error. The study included individuals of both genders, all age groups, and from the area of Police stations under the Department of Forensic Medicine, Punjab Medical College, Faisalabad. However, Postmortems conducted by the DSMB were excluded from the study. The data was analyzed using SPSS version 26.0.

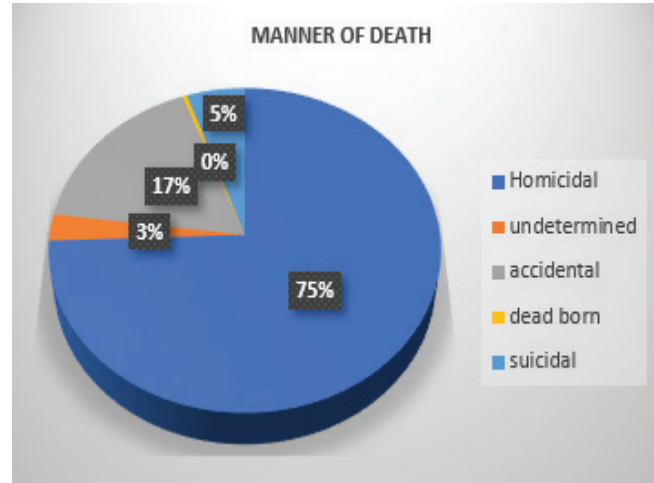
## RESULTS

In a period of one year, a total of 266 autopsies were conducted of which 198 (74.4%) were categorized as homicidal based on police inquest and autopsy. Forty-six (17.3%) died in accidents while 14 (5.2%) took their lives. In addition, 1 (0.3%) case of a dead born was received. The manner of death remained undetermined in 7 (2.6%) bodies (Figure-I).

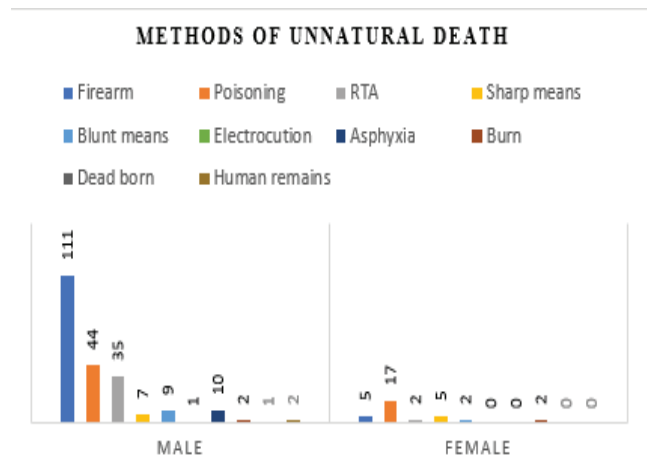
The use of firearms was the most prevalent method employed in 116 (44%) cases, followed by poisoning in 61 (23%). Road traffic accidents claimed 42 (16%) lives followed by death due to sharp weapons in 12 (4.5%) and blunt weapons in 11 (4.1%) cases. Asphyxia claimed 10 (4%) lives. As the p-value is less than 0.05, so it is concluded that there is a statistically significant difference between the genders in the methods of unnatural death, suggesting that gender plays a role in the likelihood of certain causes of death.

In this chart, the high disparity in firearm deaths between males and females, as well as the differences in poisoning and RTA, reinforces the conclusion that gender plays a role in the method of unnatural deaths.

**Figure-I: Distribution of manner of death in 2023.**



**Figure-II: Methods of unnatural death in 2023.**



The gender distribution revealed that males were the major victims of unnatural deaths accounting for 227 (85.3%) cases with 39 (14.7%) female victims, with the majority of victims falling in the 20- 39-year age group accounting for 149 (56%) cases, followed by the 40 and above age group with 94 (35.3%) cases with a p-value of 0.1108, suggesting that there is no statistically significant relationship between age group and gender distribution in the sample (Table-I).

**Table-I: Sex-wise age distribution of unnatural deaths.**

Age ( years)	Males	Females	Total	P-value
0-19	19(8.37)	04(10.25)	23(8.7)	0.1106
20- 39	122(53.7)	27(69.23)	149(56)	
40 and above	86(37.9)	08(20.51)	149(56)	
<b>Grand Total</b>	<b>227(85.33)</b>	<b>39(14.67)</b>	<b>266(100)</b>	

Table-II: Seasonal distribution of unnatural deaths.

Seasons	Months	Males n (%)		Females n(%)		Total	P-Value
Winter	December	09	52(22.9)	02	7(17.9)	59	0.515
	January	20		02			
	February	23		03			
Spring	March	22	61(26.9)	06	15(38.4)	76	
	April	24		05			
	May	15		04			
Summer	June	21	50(22.0)	02	8(20.5)	58	
	July	11		03			
	August	18		03			
Autumn	September	25	64(28.2)	00	9(23.1)	73	
	October	24		06			
	November	15		03			
Total		227		39		266	

The maximum number of fatalities was presented in October (30, 11.3%) followed by April (29, 10.9%) while the least number of casualties was presented in December (11, 4.1%). A chi-square test was conducted to examine the association between gender and the season in the context

of crime. The test yielded a chi-square value of 2.29 with a p-value of 0.515, concluding that the distribution of male and female crimes does not significantly vary across the different seasons in Faisalabad, Pakistan. as shown in Table-II.

## DISCUSSION

In Pakistan, all unnatural deaths require a police investigation<sup>[4]</sup> which is followed by an autopsy to determine the cause, manner, and mode of death. A licensed medical officer performs the postmortem examination in a government establishment/ postmortem unit or hospital. The Department of Forensic Medicine and Toxicology, Punjab Medical College, Faisalabad has a fully functional mortuary that caters to cases from Faisalabad under the jurisdiction of about twenty-one police stations functioning 24-hour round the clock, 7- days a week.

During the year 2023, a total of 266 autopsies were performed of which 198 (74.4%) were homicidal deaths followed by forty-six (17.3%) victims of accidents while 14 (5.2%) were suicidal cases. This trend was similar to a study by Naheed et al<sup>[5]</sup> in Faisalabad and Zaheen et al<sup>[6]</sup> in Lahore. However, this pattern was different from that of Gogoi N K et al<sup>[8]</sup> in India where accidental deaths were the most common, followed by suicidal deaths, and homicidal deaths falling behind these two. On the other hand, in a study conducted in Mardan<sup>[4]</sup>, accidental deaths were the most prevalent i.e. 65(38.46%) followed by homicidal deaths in 61(36.09%) cases with 40 (23.66%) cases of suicide.

Gender distribution showed that males accounted for 227 (85.3%) cases and 39 (14.7%) were female victims making a male: female ratio of 5.8:1. These findings are similar to those of Iqbal S et al in Mardan<sup>[4]</sup>, Naheed et al<sup>[5]</sup> in Faisalabad and Zaheen et al<sup>[6]</sup> in Lahore. Similar findings

were also observed in multiple studies conducted in India<sup>[8,9]</sup>. Because males have the responsibility of earning and feeding the family while in our set-up, females mostly stay home, performing the household chores rendering males more prone to accidents. In addition, the dilemma of having to fulfill even the necessities of life in this inflation drives them to anger, frustration, and short-temper resulting in suicides and murders.

The use of firearm weapons for killing oneself or another was the most common method employed, claiming the lives of 116 (44%) victims. This is due to the fact that firearms are easily available and an effective means for taking one's life or another. A similar pattern was quoted in many cities of Pakistan i.e. Faisalabad<sup>[5]</sup>, Lahore<sup>[6]</sup>, and Peshawar<sup>[10]</sup>. However, unlike poisoning being the second major cause, observations by Orakzai et al<sup>[10]</sup> showed that road traffic accidents were the next main culprit claiming lives after firearms injuries. In contrast to both, Rasheed et al<sup>[11]</sup> observed that the major fatalities were of road traffic accidents (45.32%) followed by firearm injury (16.70%) which was in accordance with Marri MZ et al<sup>[12]</sup> with 57 (47.89%) mortalities due to RTA and Firearm used in 35 (29.41%) cases.

According to this study, the majority of the victims belonged to the 30-39-year age group i.e. 100 (37.6%) followed by the 20-29-year age group with 49 (18.4%) cases. This finding was in liaison with a previous 5-year study conducted at the same center<sup>[13]</sup>. A study by Naheed et al<sup>[5]</sup> done in 2017 in the same settings however quoted the 20–29-year age group as being the most vulnerable. Regardless, all studies from

various countries showed that the majority of victims fall in the 20- 40 age group [8-16].

October was the month in which the maximum number of causalities was presented (30, 11.3%) followed by April (29,10.9%) while the least number of causalities was presented in December (11, 4.1%). This finding was in accordance with a previous study done at the same center in which the majority of fatalities occurred in September [13].

The incidence of unnatural deaths usually peaks in the summers as the rising heat tide affects the mood of an individual making him more aggressive and impatient. A similar trend was documented by Uzma et al in Lahore [6] and Rasheed et al in Hyderabad [11] with the highest number of forensic autopsies recorded in the summer. However, Gogoi et al [8] observed that the maximum number of cases presented in January (28,10.07%) and March (27, 9.71%) which they attributed to low visibility due to fog and alcohol intoxication in winter as the majority of deaths in their study were accidental in nature.

### CONCLUSION

This study concludes that the majority of unnatural deaths affect the male population with firearm weapons being the most frequently used weapon of assault. The middle age group is the most prone to unnatural deaths. There should be strict implementation of laws for buying and possession of firearms.

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### Authors' Contribution:

**Mobin Inam Pal:** Substantial contributions to the conception and design of the work

**Kishwar Naheed :** Data analysis.

**Ummara Munir:** Revised the manuscript critically and approved the final version of the article.

**Abdul Samad:** Interpretation of data for the work.

**Qurrat Ul Ain Kamran:** Drafting the work.

**Muhammad Iqbal Ghani:** The acquisition of data for the work.

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