

## Original Article

## ANALYSIS OF MEDICOLEGAL AUTOPSIES OF UNNATURAL DEATHS IN MARDAN, PAKISTAN

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### ABSTRACT

**BACKGROUND:** A medical autopsy is a scientific investigation of a dead corpse that is done to ascertain the cause and method of death as well as to confirm or rule out any possible foul play connected to the body.

*Study design:* Prospective study

**DURATION AND SETTING:** Cases referred to medicolegal section of Mardan Medical complex, Mardan from 1st January, 2018 to 31st December, 2018.

**METHODS:** All dead bodies (169) referred by police for autopsy were included. Age, gender, method of death, weapon used, and resident were factors taken into account in criminal deaths. Numbers and percentages were used to express the data gathered and the conclusions.

**RESULTS:** In total, 169 medicolegal autopsies were performed over the course of a year. There were 42 females and 127 males (75.14 % each). 65 (38.46%) of all deaths were accidental, compared to 61 (36.09%) homicidal deaths and 40 (23.66%) suicidal deaths. Guns, blunt and sharp objects, and automobile accidents accounted for the majority of fatalities. The majority of the instances involved 90 rural locations (53.25%), then 79 urban areas (46.74%).

**CONCLUSION:** There was a higher preponderance for males. The 20–29 age range was shown to be the most often afflicted age group. Road traffic accidents and deaths from firearms account for the majority of unnatural death victims. There were more victims in the countryside than in cities.

**KEY WORDS:** Autopsy, Cause of death, Unnatural Death, Homicide, Suicide, Accidents

### INTRODUCTION

The inevitable and inexorable end of human life is death. According to science, when the body's three most vital organs—the heart, lungs, and brain—stop functioning normally, it has died permanently and irrevocably. The word “cause of death” refers to the medical discovery or findings that led to the death, and the term “manner of death” refers to the mode or way of death, whether it was accidental, homicidal, suicidal, or other.<sup>1</sup>

Disease or the ageing process are the causes of natural deaths. Unnatural deaths are those brought on by outside factors (injury or poisoning), including intentional injury (homicide, suicide), unintentional injury brought on by an accident, and both.<sup>2</sup>

Homicide is defined as one person dying as a result of another person's actions. Any death that happens as a result of an accident is referred to as an accidental death. The term “suicidal death” describes the voluntary and intentional taking of one's own life. Several unnatural deaths are undetermined because toxicological testing and autopsies were unable to pinpoint the cause of death. One measure of social and mental health is the rate of unexpected death.<sup>3</sup> In the majority of nations, a medicolegal inquiry into a death is conducted to determine who is to blame and to determine the appropriate punishment in order

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to uphold justice's purposes while also satisfying the grieving family and the general public. This is essential for preventing crime, fostering peace, and advancing justice in society.

When unnatural causes are known or suspected to have contributed to a death, a medicolegal inquiry is necessary. Sudden deaths or unexplained fatalities in which the cause of death was not immediately apparent or known are subject to an inquest [4]. Inquest procedures vary depending on who is conducting the inquiry into a death, including police, magistrate, coroner, and medical examiner inquests. An inquest's goal is to gather information about the death-related facts. When a crime is reported, the police investigator is often supposed to investigate, examine and preserve the crime scene, gather the necessary evidence, and create an investigation plan. In contrast, in a case of a homicide, the police refer the body to the medical examiner for a postmortem autopsy in order to acquire the results of the autopsy as well as medical evidence that will help them determine the truth. The most thorough autopsy provides information in relation to violent activities, a possible or suspected criminal death, and may also provide pertinent insight into situations of suicidal, accidental, or unnatural deaths.

Both police and magistrate inquests are used in Pakistan<sup>5</sup>. An inquest is conducted, along with an inquiry, by a police officer from a police station or another authorised police officer in cases of alleged medical malpractice, violent fatalities, sudden, unexpected, suspicious deaths, and deaths related to medical or surgical treatment. Inquiries conducted by the magistrates in court about custodial bereavements' causes of death. The goal of a criminal investigation is to gather evidence that will help prove when an offence was committed and who was responsible for it. The investigating officer (IO) prepares the challan for submission to the trial court once the evidence has been gathered and the basis for the accused's guilt or innocence has been determined.

In our city Mardan, medicolegal autopsies are conducted at hospital tertiary care hospital Mardan medical complex. Mardan is a city, second most populated District in the Khyber Pakhtunkhwa Province of Pakistan. Cases for autopsy are referred by police officers of various police stations situated in urban and rural areas of district.

## OBJECTIVE OF THIS STUDY

To determine the range of unnatural fatalities in Mardan over a one-year study period, focusing on findings related to gender, age, manner and cause of death, weapon used, and resident area. Afterwards, this data may be employed to create research and statistics for public health and law enforcement.

## MATERIAL AND METHODS

During the research period of January 2018 to December 2018, this study was carried out in the medicolegal division of a tertiary care hospital located in Mardan, Khyber Pakhtunkhwa. The study covered 169 instances in which police had requested postmortem autopsies. Authorities-designated authorised medical officers conducted the autopsies.

The deceased's full autopsies were meticulously performed in the mortuary and included a general physical examination, a cloth examination, an exterior and internal bodily inspection, as well as medicolegal investigations. Age, sex, address, incident, friends and family of the deceased, circumstances leading to death, autopsy findings, lab test results, and the final opinion offered were all put into one document. Data entered in the proforma was tallied and examined.

## ETHICAL PERMISSION

Permission of medicolegal autopsy is granted by state/police on dead. A medicolegal autopsy will be carried out on demand from the police or magistrate. In such cases, authorization from the deceased person's family members is not necessary.

## RESULTS

Table-1 shows during the year 2018, autopsy was performed on 169 dead bodies referred to Mardan medical complex hospital Mardan. Out of 169 bodies 127 (75.14%) were males and 42 (24.85%) were female.

Table-2 shows the gender and age breakdown of the deceased in Mardan in 2018. The most vulnerable age group, in which males reported 45 (26.62%) and females 10(5.91%), was between 20 and 29 years old. The age range of 10 to 19 is the second most vulnerable, with male deaths reported at 26 (15.38%) and female deaths at 20 (11.84%), al-

though the 30-39 age range is equally vulnerable for men, with male deaths at 15 (8.87%).

Table-3/4 shows that Male fatalities totaled 127 (75.14), of which 58 (34.13%) were accidental, 47 (27.81%) were homicidal, and 20 (11.83%) were suicidal. Female fatalities totaled 42, of which 7 (4.41%) were accidental, 14 (8.08%) were homicidal, and 20 (11.83%) were suicidal. About 63 (37.28%) of all deaths throughout the year 2018 were caused by traffic-related incidents. Table- 5 shows Out of 169 cases, 90 (53.25%) cases were reported from rural areas and 79 (46.74%) cases from urban areas.

**DISCUSSION**

According to the World Health Organization, the term “cause of death” refers to “all those diseases, morbid conditions, or injuries that either caused death or contributed to death, as well as the circumstances of any accidents or acts of violence that resulted in such fatal injuries”<sup>6</sup>. A natural or unnatural cause of death is possible. A person is deemed a victim of an unnatural death when they pass away under circumstances that were not their fault. Such premature deaths are caused by the trio of homicide, accident, and suicide and happen against the laws of nature<sup>7</sup> which are governed by various legal rules. Medico-legal (ML) autopsies are conducted when required by the investigating authority in ML deaths with the goal of supplying answers to questions regarding the person’s identity, the cause of death, the moment of death, the circumstances surrounding the death, etc., thereby assisting the law enforcement agencies in cracking the case.<sup>8</sup>

Unnatural deaths in Pakistan necessitate a police/magistrate investigation and judicial adjudication. In a government hospital or establishment, autopsy is performed by a licenced medical official. To determine the specific cause of death, a full or comprehensive autopsy is required. The manner of death refers to how an illness or injury results in death and is categorised as natural, accidental, suicidal, homicidal, and undetermined.

A total of 169 medicolegal deaths were autopsied during the period of one year from 1<sup>st</sup> January, 2018 to 31<sup>st</sup> December, 2018. Of of 169 total deaths, 65 (38.46%) were unintentional, 61 (36.09%) homicidal, 40 (23.66%) committed suicide, and in 1

(0.59%) cases, the cause of death was natural death. (Table 3). Among 42 (24.85%) unnatural deaths of female, 20(11.83%) suicide, 7 (4.14%) were victims of accidents, 14 (8.28%) homicide.

This study shows out of 169 medicolegal deaths, majority cases were road traffic accidents victims accounting for about 63 (37.28%) than being killed by another person (homicide) or committing suicide. This result is consistent with recent studies showing that the leading cause of unintentional mortality in many developing nations is automobile accidents<sup>9-13</sup>. However, this conclusion conflicts with a Quetta research<sup>14</sup> that demonstrate the dominance

**Table 1: Sex-wise distribution of autopsies**

Sex	Number	Percentage
Male	127	75.14%
Female	42	24.85%
Total	169	100%

**Table 2: Age-wise distribution**

Age groups (in Years)	Male	Female	Total (%)
0-9	6(3.55%)	4(2.36%)	10(5.91%)
10-19	26(15.38%)	20(11.84%)	46(27.21%)
20-29	45(26.62%)	10(5.91%)	55(32.54%)
30-39	15(8.87%)	4(2.36%)	19(11.24%)
40-49	9(5.32%)	1(0.59%)	10(5.91%)
50-59	18(10.65%)	2(1.18%)	20(11.84%)
60-69	4(2.36%)	1(0.59%)	5(2.95%)
70+	4(2.36%)	00(00.00%)	4(2.36%)
TOTAL	127(75.14%)	42(24.85%)	169(100%)

**Table 3: Manner of Death Distribution with respect to gender.**

Manner	Male (%)	Female (%)	Total (%)
Accidental	58(34.31%)	7(4.41%)	65(38.46%)
Homicide	48(28.40%)	14(8.82%)	62(36.68%)
Suicide	20(11.83%)	20(11.83%)	40(23.66%)
Natural death	1(0.59%)	00(00.00%)	1(0.59%)
Putrefied DNA	00	1(0.59%)	1(0.59%)
Total	127(75.14%)	42(24.85%)	169(100%)

Table 4: Manner wise pattern of deaths during the year 2018

Pattern of death	Cause	Male	%age	Female	%age	Total	%age
Accidental	RTA	57	33.72%	6	3.55%	63	37.28%
	FAI Accidental	01	0.59%	01	0.59%	02	1.18%
	Total	58	34.13%	07	4.14%	65	38.46%
Homicidal	Firearm	41	24.26%	10	5.91 %	51	30.17%
	Blunt	02	1.18%	01	0.59%	03	1.77%
	Sharp	01	0.59%	01	0.59%	02	1.18%
	Hanging	03	1.77%	2	1.18%	05	2.95
	Total	47	27.81%	14	8.28%	61	36.09 %
Suicidal	Firearm	09	5.32%	05	2.95%	14	8.28%
	Hanging	01	0.59 %	00	00.00%	01	0.59 %
	Poisoning	10	5.91%	15	8.87%	25	14.79%
	Total	20	11.83%	20	11.83%	40	23.66%
Natural death		00.0	00.00	01	0.59 %	01	0.59 %
TOTAL		127	75.14%	42	24.85%	169	100%

Table 5: Area wise distribution

	Male	Female	Total
Rural	66(39.05%)	24(14.20%)	90(53.25%)
Urban	65(38.46%)	14(8.28%)	79(46.74%)
Total	131(77.51%)	38(22.48%)	169(100%)

of gunshot deaths over medical and legal mortality. The bulk of unnatural deaths, according to a Danish study, were caused by weapons and car accidents.<sup>15</sup> According to this study, there were 127 male deaths (75.14%) more than female deaths (42, 24.85%), and the ratio of male to female deaths was 3:1. The male preponderance result is consistent with those of other authors.<sup>16-19</sup> In this study, the victims' age group from 20 to 29 was the most severely affected. 55(32.54%). This finding is similar with the studies of others<sup>20-23</sup> reported highest rates of medically-related fatalities among this age group. This can be due to the fact that this age group is more energetic, emotional, and autonomous in their childhood, exposing them to all kinds of harshness and stressors.

According to the cause of death, 63 (37.28%) of the study's participants were killed in automobile accidents. A distinct male domination can be shown in these cases, with 57 (33.72%) males

and 6 (3.55%) females, likely as a result of men's greater mobility, involvement in outdoor work activities, and travel, which puts them at greater risk than women.

This study shows that 65 (38.46%) deaths were caused by firearm 51 (30.17%) in homicides and 14 (8.82%) in suicides. Our study shows that 40 (23.66%) study subjects committed complete suicide, women tend to use poisoning 15 (8.87%) and firearm 5 (2.95%) was chosen method by both males & females of taking their own lives. This study and other investigations make it abundantly clear that firearm weapons are widely available in this area<sup>23-27</sup>. This could be explained that people in this region consider firearm as status symbol and keep guns at their place of residence. Present study showed that major portion of victims were found to be rural inhabitants, which suggests that rural areas availability of firearm weapons and lack of education. Urban high population density, vehicles and activities as comparing to rural areas.

In the United States, suicides and homicides with firearms continue to be a public health concern. Between 2015 and 2016, there were 44,955 firearm suicides and 27,394 gun homicides overall among Americans aged 10 to 19 years old<sup>28</sup>. Most

suicide techniques fall into one of two types<sup>29-31</sup>; using a gun or a shotgun, hanging, slashing and piercing with sharp objects, jumping from great heights, and being driven over by a train or other vehicle. Nonviolent methods include ingesting pesticides, being poisoned by fumes, suffocation, and drug overdose.

During travel and movement, the road accidents are most unwanted happening which often result in injuries and death. Although being a preventable condition, RTA is a significant public health issue worldwide. Any injury resulting from a crash that begins, ends, or involves a vehicle in whole or in part on a public roadway is referred to as a road traffic injury.<sup>32</sup> A fatality or nonfatal injury sustained as a result of an accident on a public road involving at least one moving vehicle is also included in the definition. The most vulnerable road users are the elderly, children, and pedestrians<sup>33</sup>. Most victims or victims are young persons in their peak working years. Urbanization and population growth raise travel demand, which in turn increases the need for vehicles, leading to an epidemic-like condition in traffic accidents. According to a study conducted in Pakistan, injuries caused by road traffic accidents constitute a significant public health issue in that country<sup>34</sup>. NTRC Islamabad, estimated accident data approximately 5309 traffic fatalities and 9536 non fatalities were reported in Pakistan during the year 2018.<sup>35</sup>

## CONCLUSION

Present study shows that death due to road traffic accidents and firearms which mostly involved in young age group have reached an alarming stage. The Government policy should focus on road users' safety and to keep an eye on and regulate the use of illegal weapons.

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