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## Study on Unnatural Death Pattern in Mardan, Pakistan.

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### Abstract:

**Introduction:** Medico-legal autopsy is a scientific examination of a dead body which is performed to determine the cause, mode, time since death, manner of death and in some cases the identification of the deceased where unknown; thus helping the law enforcement agencies and the society in providing justice to everybody even after death.

**Objective:** To determine the spectrum of unnatural deaths during a study period of one year in Mardan, so that information may subsequently be used to develop public health and law enforcement work and statistics.

**Methodology:** This retrospective study was conducted Mardan Medical Complex Hospital, an affiliated teaching hospital of Bacha Khan Medical College, Mardan from 1<sup>st</sup> January, 2017 to 31<sup>st</sup> December, 2017. Data of unnatural deaths (n=119) obtained from mortuary. The demographic variables age and gender, manner of death, weapon used and urban-rural variation in medico-legal deaths were noted. Data presented as numbers and percentages.

**Results:** A total of 119 medico-legal autopsies were conducted during one year study period. Males were 97 (81.51%) and females 22 (18.48%). Accidental deaths significantly predominated 58 (48.73%) over homicidal 36 (30.25%) and suicidal 22 (18.48%) manners of death. Most of the deaths resulted from road traffic accidental deaths followed by firearms, blunt and sharp weapons. Most of the cases were urban inhabitants 72(60.50%) followed by those belonging to rural areas 47 (39.49%).

**Conclusion:** Majority of victims of unnatural deaths died from road traffic accidents followed by firearm deaths, and definitely deaths reported from urban areas was more compared to the rural areas.

**Keywords:** Medico-legal autopsy, Unnatural death, Homicide, Suicide, Accident

### Introduction:

Death is an unavoidable and inevitable fate of human life. Scientifically, death refers to the permanent and irreversible cessation of the physiological functions of the most important organs of the body, viz, heart, lungs and brain. The cause of death is the medical finding or findings responsible for the death and the manner of death means the mode or method of death whether natural, homicidal, suicidal, accidental or un-

determinable.<sup>1</sup> Natural deaths are due to disease or the aging process. Unnatural death is a death caused by external causes (injury or poisoning) which includes death due to intentional injuries such as homicide or suicide, and death caused by unintentional injury in an accidental manner.<sup>2</sup>

Homicide is the death of one human being as a result of the conduct of another. Accidental death is defined as any death that occurs as the result of an accident.

Suicidal death refers to the act or an instance of taking one's own life voluntarily and intentionally. Some unnatural deaths are undetermined where the cause of death could not be ascertained by autopsy and toxicological examination. Unnatural death is one of the indicators of the level of social & mental health.<sup>3</sup> In most of the countries, medico-legal death investigation is carried out to fix the responsibility on the wrong doer or offender and aid in the appropriate punishment in order to meet the ends of justice and to satisfy the relatives and public at large. This is necessary for the prevention of crime and promotion of peace and justice in society.

There are many systems of inquest in death investigations, viz, police inquest, magistrate inquest, coroner inquest, medical examiner inquest etc. The objective of an inquest is to ascertain facts pertaining to the death. According to our country law; deaths which require medico-legal investigation, may be deaths either known or suspected to have been caused by unnatural causes and sudden deaths or unexplained deaths where the medical cause of death is not certain or known, are subjected to an inquest.<sup>4</sup> In routine, when a criminal event is reported, the police investigation is expected to proceed, examine and preserve the crime scene, collect the evidence, and devise an investigative plan. In such incidents, police refer the dead body to the medical examiner for autopsy. The duty of a medico-legal officer is to document the findings at the autopsy and answer the questions asked by the investigating officer. Thus medical evidence helps the law to arrive at the truth. A meticulous autopsy provides information in connection with violent acts, a possible or suspected criminal death and relevant insight into cases of suicides, accidents, or other unnatural deaths.

In Pakistan, police and magistrate inquests are in practice.<sup>5</sup> Police officer of the relevant jurisdiction/ police station conducts an inquest; makes an investigation in deaths due to violence, sudden, unexpected, suspicious, criminal deaths and deaths associated with medical or surgical treatment where medical negligence is alleged. While in custodial deaths, judicial inquiries are held by the magistrate. The process of criminal investigation aims to collect the evidence to establish the commission of an offence and the roles played by individuals in the commission of those offences. Once evidence is collected and grounds of

involvement or innocence of the accused are established, the investigating officer (IO) prepares challan for submission to the trial court.

Mardan is relatively a developing district in Khyber Pakhtunkhwa Province, Pakistan. The Forensic Medicine Department of Bacha Khan medical college is responsible for providing medico-legal service at its affiliated tertiary care teaching hospital Mardan. Both the urban and rural police stations refer their cases to this Department for autopsy.

#### **Methodology:**

The present study was conducted at the medico-legal section of a tertiary care hospital situated at Mardan Medical Complex Hospital, Mardan, an affiliated teaching hospital of Bacha Khan Medical College, Mardan from January 2017 to December 2017. During this period, 119 cases were brought by police for postmortem examination. The autopsies were performed by authorized medical officers Mardan Medical Complex Hospital, Mardan an affiliated teaching hospital of Bacha Khan Medical college, Mardan issued an ethical clearance certificate Ref: No: 25/RC/ BKMC.

The complete autopsies of the deceased were thoroughly carried out in the mortuary which consist of general physical examination, cloth examination, external and internal body examination along with the investigations (samples collected and sent for toxicology to forensic science lab), were carried out. The information pertaining to age, sex, address, incident as per police inquest report, circumstances leading to death, findings of autopsy, Laboratory results and final opinion given were compiled. The data was entered in proforma, tabulated and analyzed.

#### **Results:**

During the year 2017, 119 dead bodies were autopsied. Out of which 97 (81.51 %) were males and 22 (18.48 %) were females. Male to female ratio was 4.4:1 for the total sample as shown in table no 1.

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

Sex	Number	Percentage
Male	97	81.51 %
Female	22	18.48 %
<b>Total</b>	<b>119</b>	<b>100 %</b>

The most common age category was 21-30 years in males (34.02%) and 11-20 years in females (45.45%) as shown in table no 2.

**Table 2: Age-wise distribution**

Age groups (in Years)	Male	Female	Total (Percentage)
0-10	07	01	08 (6.72 %)
11-20	15	10	25 (21.0 %)
21-30	33	05	38 (31.93 %)
31-40	15	02	17 (14.28 %)
41-50	13	00	13 (10.92 %)
51-60	05	01	06 (5.04 %)
61-70	04	02	06 (5.04 %)
71-80	05	01	06 (5.04 %)
<b>Total</b>	<b>97</b>	<b>22</b>	<b>119 (100 %)</b>

Out of total 119 cases 58 (48.73%) cases were accidental, 36 (30.25%) were homicide and 22 suicide (18.48%). While 3 (2.52%) cases remained undetermined (Table 3)

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

Manner	Male (%)	Female (%)	Total (%)
Accident	51 (52.57%)	7 (31.81 %)	58 (48.73 %)
Homicide	33 (34.02%)	3 (13.63 %)	36 (30.25 %)
Suicide	10 (10.30%)	12 (54.54 %)	22 (18.48 %)
Undetermined	03 (3.09 %)	00 (00 %)	3 (2.52 %)
<b>Total</b>	<b>97 (81.51%)</b>	<b>22 (18.48 %)</b>	<b>119 (100 %)</b>

A total 58 (48.73%) accidental cases 57 (47.89%) occurred due to RTA. Firearm used in 30 (25.21%) cases of homicide and 5 (4.20%) cases of suicide. Poisoning cases were 16 (13.44%) as shown in table no 4. Both the urban and rural police stations refer their cases to department for autopsy. Among these autopsies 72 (60.50%) belong to urban community and 47 (39.49%) were inhabitants of rural areas of the total sample as shown in table no 5.

**Table 4: Manner of deaths during the year 2017**

Manner of death	Cause	Male	Female	Total	percent
Accident	RTA	50	07	57	47.89 %
	Fall from height	01	00	01	0.84 %
	<b>Total</b>	<b>51</b>	<b>07</b>	<b>58</b>	<b>48.73 %</b>
Homicide	Fire-arm	29	01	30	25.21 %
	Blunt	02	02	04	3.36 %
	Sharp	02	00	02	1.68 %
	<b>Total</b>	<b>33</b>	<b>03</b>	<b>36</b>	<b>30.25 %</b>
Suicide	Poi-soning	06	10	16	13.44 %
	Fire-arm	04	01	05	4.20 %
	Hang-ing	00	01	01	0.84 %
	<b>Total</b>	<b>10</b>	<b>12</b>	<b>22</b>	<b>18.48 %</b>
Undetermined		03	00	03	2.52 %
<b>TOTAL</b>		<b>97</b>	<b>22</b>	<b>119</b>	<b>100%</b>

**Table 5: Urban and Rural Inhabitants**

Area	Total	Percentage
Urban	72	60.50 %
Rural	47	39.49 %
<b>Total</b>	<b>119</b>	<b>100 %</b>

**Discussion:**

The World Health Organization defines cause of death as "all those diseases, morbid conditions, or injuries which either resulted in or contributed to death and the circumstances of the accident or violence which produced any such fatal injuries."<sup>6</sup>The cause of death can be either natural or unnatural. When a person does not die due to the natural circumstances, a person is considered victim of unnatural death. Such deaths occur prematurely against the course of nature and result from the triad of homicide, accident, and suicide<sup>7</sup> which has different legal implications. Medico-legal (ML) autopsy is performed when ordered by the investigating authority in ML deaths, with the aim of providing answers to questions about the identity, cause of death, time of death, circumstances of death etc. thus helping the law enforcing agencies to solve the crime.<sup>8</sup>In Pakistan, unnatural death requires investigation by the police/ magistrate and final resolution

by the courts. Autopsy is carried out by an authorized medical officer in a government hospital. A complete or full autopsy is necessary to ascertain the definite cause of death. The manner of death is the determination of how the injury or disease leads to death and is classified as natural, accident, suicide, homicide, and undetermined.

During study period among 119 autopsies; 58 (48.73%) were accidental, 36 (30.25%) homicidal, 22 (18.48%) committed suicide and in 3 (2.52%) cases the manner of death remained undetermined. Among 22 unnatural deaths of females, 12 (54.54%) were suicide, 7 (31.81%) were victims of accidents and 3 (13.63%) were homicide. Accidental deaths due to road traffic accident was found major proportion (n=57, 47.89%) cases as compared to homicides or suicides. This finding is in agreement to published studies<sup>9-12</sup> where road traffic accident is considered major cause of unnatural deaths in many developing countries. However, this finding is in contrast to a study conducted at Quetta<sup>13</sup> where the firearm deaths outnumbered all unnatural deaths. Another study from Karachi, revealed that road traffic accident and firearms both were likewise responsible for the majority of unnatural deaths.<sup>14</sup> The male's preponderance for unnatural death in this study (81.51%) is consistent work of other authors.<sup>15-17</sup> Current study showed the most affected age group of the victims belonged to 21-30 years (31.93%). This finding is similar to other studies that reported a higher incidence of medico-legal deaths in this age group.<sup>18-20</sup> This can be attributed to the fact that this age group is more active, emotional, and facing many stressful factors thus exposing those to all sort of unusual happenings. Keeping in view the cause of death, major proportion of the study subjects 57 (47.89%) died from road traffic accidents. Out of these cases, 50 were males and 7 were females, showing a clear male dominance due to more male mobility and involvement in outdoor work activities. This study shows that a total of 35 (29.41%) deaths were caused by firearms; including 25.21% homicides while 4.20% suicides. Overall 22 study subjects committed suicide however, the use of firearm for the purpose was done by 5 only. Women opted more to use poisons (45.45%). Firearms was the chosen method of committing suicide in both genders (4.20%). The

rampant availability of firearm weapons in this region is quite evident from this study and other studies.<sup>21,22</sup>

Probable explanation might be the fact that, people in this region, frequently keeps firearm not only for security and protection but also as status symbol. Firearms contribute significantly to homicide and suicide as cause of death in the United States as well, causing 27394 homicides and 44955 suicides during 2015-2016.<sup>23</sup> Suicide methods are usually divided into two main categories, violent and nonviolent.<sup>24-26</sup> Violent methods include firearm suicide, hanging, cutting and piercing with sharp objects, jumping from high places and getting run over by train or other vehicles; while ingestion of pesticides, poison by gases, suffocation and drug overdose are among the nonviolent methods. Violent methods for suicide are usually preferred by male while female for the purpose prefer non-violent methods. Although, preventable, yet road traffic accidents are major public health problem around the world. A road traffic injury is defined as any injury caused due to crashes originating, terminating or involving a vehicle partially or fully on a public road.<sup>27</sup> It is also defined as a fatal or nonfatal injury incurred as a result of a collision on a public road involving at least one moving vehicle. Children, pedestrians, cyclists and the elderly are among the most vulnerable of road users.<sup>28</sup> The population who are affected or killed are mostly young people in their prime productive age.

Present study showed that most of the victims of unnatural death were urban residents. Apparent reason is high population density of urban areas when compared to rural areas. Urban growth demands increased travelling consequently road traffic accidents are frequent occurrence. A Study in Pakistan revealed that Road Traffic accident Injuries are a major public health problem in Pakistan.<sup>29</sup> National transport and research Centre (NTRC) Islamabad, during the year 2017-18 published summary of accident data in Pakistan, in which 4,829 were fatal and 6,292 non-fatal cases.<sup>30</sup>

#### **Conclusion:**

Our findings call for an instant program made by policy makers to focus on road users' safety and strict laws should be implemented to limit illegal firearms. Surveillance must be increased to monitor and reduce the loss of precious human lives.

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