

# Results of Medicolegal Autopsies Conducted At a Tertiary Care Hospital, Sukkur, Pakistan

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## Abstract

**Objective:** To describe the results of medicolegal autopsies conducted at mortuary of Ghulam Muhammad Mahar Medical College, Sukkur, Pakistan during a specific period.

**Methods:** Present research is a retrospective descriptive inquiry of medicolegal postmortems conducted in the morgue at Ghulam Muhammad Mahar Medical College hospital, Sukkur, Pakistan from a period of January 2018 to December 2020 after acquiring ethical approval from the hospital. A total of 297 medicolegal autopsies were performed during this specific period. Their significant findings such as gender, age, caste, area of residence, cause & manner of death were collected from autopsy records, Inquiry papers and reports and assessed using SPSS 23 version. All categorical values in data were determined as frequency and percentages.

**Results:** It was observed that out of 297 medicolegal deaths, maximum number of autopsies conducted were in third decade of life (n=133 cases, 44.78%) followed by 66 (22.22%) in 2<sup>nd</sup> decade of life. Male cases predominated over female cases, which were (n=193, 65%). Majority of the cases were resident of local areas of Sukkur. Mughals were in majority with 79 cases (26.59%) followed by Sheikhs with 62 cases (20.87%), Baloch 44 (14.81%). Maximum number of deaths were due to road traffic accidents (n=103, 34.68%) followed by firearm injuries (n=73, 24.57 %) and asphyxial deaths (n=11, 3.70%). Accidental manner was found to be commonly occurring manner of death (n=192, 64.64%) trailed by homicidal (n=40, 13.46%).

**Conclusion:** It is observed that maximum no of cases were in age range 30-40 years and preponderance of male sex is seen over female sex, could be due to more exposure of males to outer world. Most common cause of death found was road traffic accidents probably due to increased frequency of transportation and decreased regulation of traffic control.

**Keywords:** Medicolegal Cases, Autopsies, traffic accidents, firearms, accidental injuries

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## Introduction

The word “autopsy” is derivative of a Greek word ‘autopsia’ meaning ‘to look for oneself’<sup>1</sup>. Autopsy is basically the examination of dead body so as to identify the cause and mode of death. Autopsies

can be of two types: forensic (medico-legal and clinical). Medicolegal is executed to determine any mysterious, fierce, or unidentified cause of death. Clinical autopsy is accomplished in the hospital setup by the consultant after permission of relatives of died person in order to confirm the cause of death<sup>1</sup>.

Medicolegal autopsies are fundamental component of an inquiry of unexpected suspicious death. Retrospective analysis of autopsy cases is usually performed to identify the frequency of unnatural cases of death of a particular area. This assists us to assess the demographic requirements depending on mortality figures particular to that area. It is also needed to stop the preventable fatalities in future

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and to examine the unpretentious crime rate of that area<sup>2</sup>. Medicolegal autopsy is executed on the demand of legal authority in situations linking to suspicious, sudden, unnatural, controversial or criminal deaths. The findings obtained are used for legal purposes so as to facilitate the course of justice<sup>3</sup>. Purpose of conducting postmortem investigation is to discover the identification of unknown dead body, determining the cause and timing of death, deciding the natural and unnatural mode of death, concluding whether it was homicidal, suicidal or accidental. For newly born babies, the inquiry of dead fetus should also be done<sup>4</sup>.

Forensic type of autopsy produces an evidence based decision that formulates a foundation for interpretations/opinions derived from a trial for criminal death, medical misconduct, administrative or workmen's reparation hearing. The main role of medicolegal autopsy comes while investigating the death cases comprising of blunt trauma to any body part, fetus/child deaths, postoperative deaths, and drug associated deaths. Innovation of newest modern techniques of toxicological investigations has increased the chances of concluding at the cause of death due to use of any medicines. Clinical autopsies are sometimes demanded by the relatives of died person, not satisfied with medical treatment being provided. Life insurance companies also depend on documentary evidence of death acquired by medicolegal autopsy report. Medicolegal autopsy reports are also obligatory required by petitioners and defense attorneys in cases of medical negligences<sup>5</sup>.

Whereas, the medical type of autopsy is considered as gold standard for diagnostic purpose and is a chief tool for health care assessment. Correctly diagnosing the cause of death and concomitant diseases is imperative not only for individual cases but also for developing healthcare policies and research for populations. Many studies indicated that autopsy exposed a high occurrence of cardiac and cerebrovascular diseases in a large proportion of patients which were not predicted before autopsy, as projected from the referral documents<sup>6</sup>.

Decline in hospital autopsy cases not only adversely affects physician's education but also medical quality control to an indefinite extent. Overall autopsy rates are still low in various countries. Though, the medicine internists feel comfortable in requesting autopsies, but report unsatisfactory guidance on various technical issues and showed more interest in providing instructional booklets to relatives witnessing an autopsy and demanded enhanced support and communication from pathology trainees<sup>7</sup>.

Based on WHO ICD-10 (International Statistical Classification of Diseases)<sup>8</sup> immediate cause of death is defined as the last injury or cause directly leading to death. The primary cause of death is the disease or injury that commenced the processes eventually leading to death. All other illnesses partaking minor role in lethal outcome would be called as contributory causes. The underlying cause of death would only be mentioned in mortality statistical data<sup>8</sup>.

Medicolegal autopsies help to find out cause, manner, and mechanism of death. Manners of death include natural, accidental, suicidal, and homicidal in nature. Diseases and illnesses are main cause of natural deaths. Injury or trauma is main cause of accidental death. In this case, injury imposed would not be intentional. Homicidal death is the type of death caused by another person with the bad intention to cause injury. Suicidal death is intentional death of one self by his or her own self. Extreme derangements in body functions would be the cause of death in case of suicide. The mechanism of death would be mainly related to immediate cause of death<sup>5</sup>.

Overall, there is decline in autopsy rate all over the world. One of a study reported decline in autopsy rate from 80% to 39% but the autopsy efficaciously answered the clinical queries in 97% of cases. This concluded that the role of autopsy has not lessened in spite of innovative diagnostic technologies and remains an effective tool in medical care verdict<sup>9,10</sup>. The recent decline in autopsy has been ascribed to high costs of procedures, risk of

malpractice litigation, advancement and developments in medical techniques<sup>11,12</sup>. Present study was specifically designed to analyze the postmortem records of various medicolegal autopsies conducted during a span of 3 years at the mortuary of a single tertiary care institute of interior Sindh.

**Material and Methods**

Present research is an observational retrospective descriptive investigation of medicol-egal postmortems conducted in the morgue of Gh-ulam Muhammad Mahar Medical College hospi-tal Sukkur, Pakistan from January 2018 to December 20-20.It is a tertiary care hospital located at Sukkur, the third largest city of Sindh (population arou-nd 5.5 million), comprising of more than 600 beds. It has a well-established mortuary with two cold storages for dead body preservation. The capacity of one cold storage is 6 bodies at a time. All these facilities are within hospital premises. Areas covered by the hospital include Sukkur, Ghotki, Shikarpur, Rohri, Panoakil and referred cases of Khairpur Mirs and Gambat and some areas of Baluchistan.

Ethical approval was taken from the hospital in the start.Significant data like gender,age, caste, area of residence, cause & manner of death, major autopsy findings were gathered from Post-mortem record and inquiry reports. The information was gathered, and entered on Microsoft excel and assessed using SPSS 23. All categorical values in data were determined as frequency and percentages.

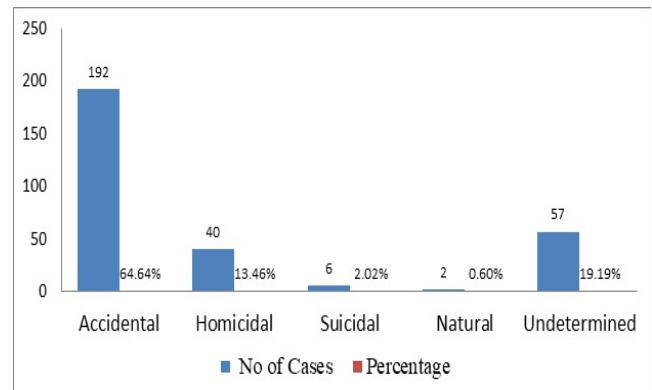
**Results**

A total of 297 medico legal autopsies were executed from January 2018 to December 2020. Among these, 193 (65%) dead bodies pertained to male gender, while 104 (35%) dead bodies belonged to female gender. Majority of autopsied cases i.e.133 (44.78%) lied in the age range of 31-40 ye-ars, tracked by 66 cases (22.22%) in the age range of 21-30 years (table 1). Majority of the cases were resident of local areas of Sukkur. Cases belonged to a variety of castes. Mughals were superseding with 79 cases (26.59%), trailed by Sheikhs with 62 (20.87%), Baloch 44(14.81) and 55 (18.51-

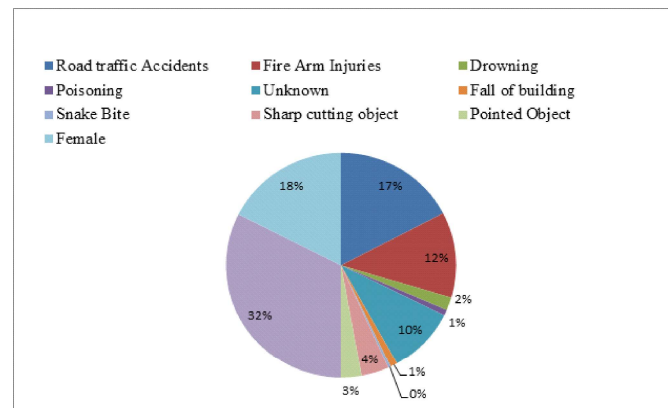
%) cases were unknown.Highest no of the deaths were accidental (n=192, 64.64%) type, trailed by homicidal (n=40, 13.46%), Suicidal (n=6, 2.02%), natural (n=2,0.06%), and undetermined (n=57, 19.9 %) in nature.(Figure:1) Road traffic accidents (RT-A) were determined to be the most commonly occurring cause of death (n=103, 34.68%), trailed by firearm injuries (n=73, 24.57%) and asphyxial de-aths (n=11, 3.70%) (Figure:2).

**Table 1.** Cases distribution based on age groups (N=297)

Age groups	No of cases	Percentage
10-20	9	3.03%
21-30	66	22.22%
31-40	133	44.78%
41-50	52	17.50%
51-60	33	11.11%
61-70	04	1.3%



**Fig 1.** Cases distribution based on manner of death



**Fig 2.** Cases distribution based on cause of death

## Discussion

Medico-legal autopsies are executed according to the rules and laws of a particular country, and the outcomes derived by performing autopsies are permissible evidence in a court. A detailed epidemiological profile can be produced on the basis of autopsy findings, which can assist device suitable precautionary actions for future. In present study, a total of 297 medico-legal autopsies were completed in the morgue of Ghulam Muhammad Mahar Medical College hospital, Sukkur during a span of 3 years from January 2018 to December 2020. One of a study pertaining to Rawalpindi reported 215 medico-legal autopsies during the year 1997<sup>13</sup>. While in the year 2002, 662 medicolegal autopsies were reported from Peshawar<sup>14</sup>. A study from Egypt reported 511 cases of medicolegal autopsy cases during a period of 2008-2011<sup>15</sup>.

In our study, victims subjected to medico-legal autopsies were predominantly males. A male predisposition of medicolegal death is reported not only in many studies conducted in Pakistan but also in many countries all over the world. This can be explained by the more exposure of males to outside world. Hesitancy to get female dead bodies being autopsied should not be disregarded<sup>15-17</sup>.

In our study, highest number of medicolegal autopsy cases belonged to the age group of 31-41 years (44.78%), followed by 21-31 years age group (22.22%). In a recent study, medicolegal autopsies data of all road traffic accidents collected from JP-MC during the year 2019-2020 was analyzed and it was observed that the majority of deaths were witnessed in the age group of 18-40 years (54.5%), while the lowermost figure was noted in the age group of  $\geq 60$  years (8.5%). The male: female postmortem ratio was determined to be 6.03:1<sup>18</sup>. Results of this study are comparable to our results. Younger age group is more persuaded toward risky adventuresome actions, such as driving on high speed and driving motorbikes on single wheel. These results are very alarming as youth is mainly responsible for a country's economic growth and their increased mortality rate is great harm to a country's economy and growth.

Mirza FH *et al* reported 19-32 years of age as the most common age for medico-legal autopsies conducted in Karachi during the year 2008-2009<sup>16</sup>. Whereas Ishfaq N *et al* reported 20-29 years of age as the most common age for medicolegal autopsy cases conducted in Lahore in 2016<sup>17</sup>. These variation in age groups might be due to differences in their manner and cause of deaths. In contrast to our study, Mirza F *et al* stated Homicidal as the commonly occurring mode of death (54%), trailed by accidental (n=822, 39.3%). In his study, firm arm injuries were found to be accountable for maximum number of deaths (44.6%) trailed by roadside traffic accidents (8%). The study was based on collection of data from big city like Karachi. This could be the reason of contrasting results in comparison to our study based on Sukkur.

In our study, accidental death was found to be the commonly occurring mode of death (64.64%) trailed by homicidal (13.46%) death. This finding is in contrast to prior studies where the homicidal manner of death was the most common followed by the accidental deaths<sup>16,17</sup>. This difference in results could be due to data gathering from much larger cities like Karachi and Lahore. This indicates prevalence of much violence and crime rate in bigger cities. Ahmad *et al* collected data from 1996 till 2000 from Karachi city and found upswing in homicidal deaths<sup>19</sup>. Another study performed in district Dera Ismail Khan found that during the year 2007-2008, homicidal deaths were accountable for 75% of all forensic autopsies. But the results were mainly based on homicidal deaths by bomb blast injuries during a particular year<sup>20</sup>. A study based on Faisalabad conveyed 188 cases of homicidal deaths during the period spanning from July 2001 to June 2002<sup>21</sup>. A study from Egypt also reported homicidal deaths (57.34%) as the most common manner of deaths followed by accidental deaths (16.83%)<sup>15</sup>.

In our study, major causes of death comprised of road traffic accidents (34.68%), followed by firearm injuries (24.57%). Mirza FH *et al* reported contrasting results for Karachi where firearms injury were the commonly occurring mode of deaths, trailed by traffic accidents<sup>16,17</sup>. Similarly, a study condu-

cted in Bahawalpur during the period 1997-1999 showed 44.1% incidence of homicidal deaths by firearm<sup>22</sup>. The data of this study was purely based on cases of homicidal deaths only.

Whereas, if we observe internationally, Tambuzi *et al* in 2021 performed the retrospective analysis of autopsy data of accidental deaths gathered from Institute of Forensic Medicine of Milan and concluded that 76% of road traffic deaths pertained to male gender. Among these 54% belonged to the age range 10-49 years, and 62% of the patients expired before reaching to hospital<sup>23</sup>.

According to WHO, nearly 1.35 million people die annually due to road traffic accidents and 93% of these deaths occur in lower-middle-income countries. Road traffic accidents impose a cost of 3% of their gross domestic product to majority of countries. Pedestrians, cyclists, and motorcyclists are the most vulnerable population for road traffic accidents. Road traffic injuries are the chief cause of death in the age group ranging from 5-29 year<sup>24</sup>. Thus deaths due to road traffic accidents is an essential public health concern requiring governmental actions on priority.

Limitations of this study include, it is a single center based study encompassing small sample. This study must be performed again by adding other mortuaries of the city as well. Deaths due to accidents are very frequent in our country. Hence, it is mandatory to explore the mortality rate caused by road traffic accidents so that government can take proper measure to reduce it.

Traffic control laws must be executed strictly. Harsh actions should be taken against drivers who drive speedy, drink alcohol or use cell phone while driving. Road conditions must also be improved as these are some common causes of road traffic accidents. Funds must be allocated and resources must be generated for the improvement in ambulance and paramedic facilities so that cases can be brought to nearest hospital without delay. Law enforcement and strict measures should be taken to control the possession of illegal firearms and sharp weapons.

## Conclusion

It is observed that maximum number of postmortem cases pertained to age range of 30-40 years and preponderance of male gender is seen over female gender. Most frequently occurring cause of death noted was road traffic accidents trailed by firearm injuries. Increased road traffic accidents are probably due to higher frequency of transportation and failure to implement traffic safety regulation. Whereas increased firearm cases could be due to possession and use of illegal weapons.

## Conflict of Interest

Authors have no conflict of interest and no grant/funding from any organization

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