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RESEARCH ARTICLE
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RETROSPECTIVE ANALYSIS OF MEDICO-LEGAL AUTOPSIES AT LIAQUAT UNIVERSITY HOSPITAL, HYDERABAD

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ABSTRACT

Background: Forensic medicine plays a crucial role in judicial proceedings by uncovering the scientific truths that lie beneath the surface, often invisible to the naked eye or untrained observer, thereby providing critical evidence to inform judgments. **Objectives:** The aim was to identify trends and causes specific to the region of medicolegal deaths, which can inform local healthcare policies and practices. This research builds on existing studies that highlight regional variations in medicolegal cases, influenced by factors such as law enforcement, socioeconomic status and cultural norms**. Study Design**: Cross sectional study. **Study place**: Medicolegal Section Liaquat University Hospital Hyderabad and Department of Forensic Medicine & Toxicology LUMHS, Jamshoro. **Study duration:** 01 year from January 2022 to December 2022. **Method:** A total of 212 autopsy cases from the Hyderabad region were analyzed. The majority of the cases were males, accounting for 80.2% (170 cases), while females comprised 19.8% (42 cases). **Results:** The primary cause of death was fire arm on top of list for cause of death 52 (24.5%) followed by assault 49(23.1%), RTA (road traffic accident) 45 (21.2%), drowning 22(10.3%), strangulation 14(6.6%), hanging 12(5.6%), poisoning 8(3.9%) and train accidents were 6 (2.8%). The age range of the cases was between 4 and 75 years, with a mean age of 34.13 years and a standard deviation of 14.91 years. Statistical analysis was performed using SPSS Version 22 to determine frequencies, means, standard deviations, and minimum and maximum values for various variables. **Conclusion:** The studied concluded that Male gender is more involved with maximum cases from the fire arm injuries followed by assault and most of the cases were from the middle age group.

Key Words: Autopsy, road traffic accidents, fire arm, asphyxia, assaults.

INTRODUCTION

Human life is a precious gift, and death is an inevitable part of existence, typically occurring due to natural causes such as old age, chronic illness, or accidents. However, when death deviates from these expected patterns, it often necessitates scientific investigation to uncover any potential foul play or unnatural circumstances. The postmortem examination, or autopsy, has evolved significantly over the centuries. Despite being a contentious issue in the 15th and 16th centuries due to social and religious concerns, it has become the gold standard for determining the cause of suspicious deaths worldwide. By providing scientific evidence, autopsies play a crucial role in serving justice and offering solace to grieving families. According to available data, deaths due to natural causes occur approximately ten times more frequently than those resulting from unnatural causes. Furthermore, in the majority of cases (60.3%), a single cause of death is identified, while in 26.6% of cases, two contributing causes are reported. Through these investigations, autopsies not only clarify the circumstances surrounding a death but also contribute valuable insights into public health and safety [1]. The autopsy procedure has undergone significant transformations with advancements in scientific technology. Traditionally, autopsies involved invasive methods, where body cavities were opened, and fluids and tissues were collected for analysis. However, this approach has been modified and refined over time. The first significant shift was towards Minimally Invasive Autopsy (MIA), which reduced the level of intrusion. More recently, the development of Virtopsy has revolutionized the field. Virtopsy combines advanced imaging techniques such as CT (Computed Tomography) and MRI (Magnetic Resonance Imaging) with photogrammetry-based 2D and 3D optical scanning, along with minimally invasive angiographic techniques. These advancements have brought numerous benefits, including rapid diagnosis of the cause of death, reproducible data collection, and reduced likelihood of contamination, as the process is less intrusive and more controlled. Nonetheless, these modern techniques also come with challenges, such as high costs associated with the sophisticated equipment and the potential for artifacts that can complicate the interpretation of results. Despite these limitations, the shift towards less invasive and more technologically advanced autopsy methods represents a significant step forward in forensic pathology, enhancing the accuracy and efficiency of death investigations. [2]. Six countries were reported to constitute >50% of the all-cause maternal mortality including Afghanistan, Congo, Ethiopia, India, Nigeria and Pakistan [3] Despite significant advancements in death investigation and autopsy techniques, a substantial challenge persists globally. In approximately two-thirds of countries, deaths often go unregistered, leading to unreliable data on causes of death. This issue is compounded by the fact that nearly 50% of deaths occur in remote or hard-to-reach areas, further complicating accurate reporting. Moreover, even with advanced diagnostic methods, certain conditions can be overlooked. For instance, kidney disease, which claims the lives of around 90,000 Americans annually and ranks as the 9th leading cause of death, is often underdiagnosed. Studies reviewing autopsy reports have revealed that renal lesions are missed in approximately 60% of cases, underscoring the need for improved diagnostic precision and reporting practices. This discrepancy highlights the ongoing gap between technological advancements and the practical challenges faced in accurately capturing and understanding global mortality data. Addressing these issues requires concerted efforts to enhance death registration systems and improve diagnostic accuracy, particularly in underserved regions. [5]. There is not doughty that autopsies do have some errors and discrepancies ranging from 30%-38% as reported by literature [6] Current study was conducted to observe the pattern of medicolegal death cases presented to the Medico-legal section of the Liaquat University Hospital, Hyderabad Pakistan.

METHODOLOGY

The study took place in the medicolegal section of the Liaquat University of Medical & Health Sciences, Jamshoro. A total of 212 autopsy cases from the Hyderabad region were analyzed. All medicolegal death cases of any age of both genders were included in the study while all other medicolegal cases were excluded from the study. Data was collected by the medicolegal officer of the concerned section on a proforma with details of the diseased like age, gender, address, habits.

Mean and SD of the age was calculated while frequency and percentage was calculated for gender, month of presentation, particular age range and for the cause of death using SPSS Version22.

RESULTS

Mean age of the subjects was found to be 34.13+14.91 years with 4 years as minimum and 75 years as maximum age. Male component was 170(80.2%) while females were 42(19.8%) (Figure 2) with fire arm on top of list for cause of death 52 (24.5%) followed by assault 49(23.1%), RTA (road traffic accident) 45 (21.2%), drowning 22(10.3%), strangulation 14(6.6%), hanging 12(5.6%), poisoning 8(3.9%), train accidents were 6 (2.8%) and others while 4(1.8%).(Figure01). Maximum cases were in 26-35 years 64(29.49%) followed by 50(23.04%), 39(18.39%), 29(13.6%) from age ranges 16-26years, 35-45years and 45- 55respectively. Children 4-15 years were 18(8.29%), while 7(3.3%) were from55-65 years and 5(2.3%). (Table 1) According to monthly distribution maximum cases were found in January 16(7.5%) followed by March and December with 19(8.9%) and 14(6.6%) respectively. (Table 2).

Figure 01. Gender Distribution

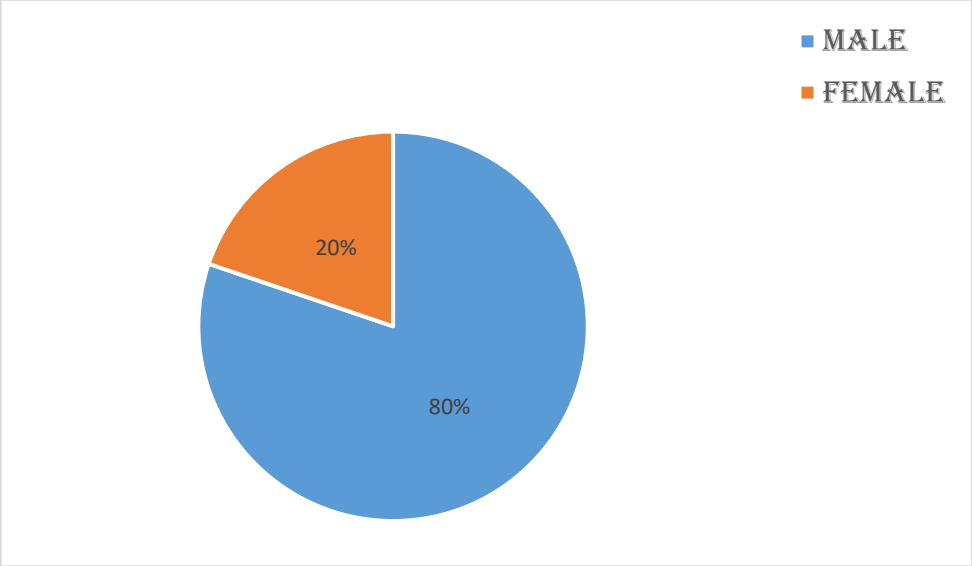

Table 01: Frequency and percentage in terms of age ranges

Age Range	Frequency	Percentage
4-15 Years	18	8.29%
16-25 Years	50	23.04%
26-35 Years	64	29.49%
35-45 Years	39	18.39%
45-55 Years	29	13.6%
55-65 Years	7	3.3%
65-75 Years	5	2.3%
Total	212	100%

Table 02: Month wise distribution of frequency and percentage of cases

Month	Frequency/Percentage	Month	Frequency/Percentage
January	16(7.5%)	July	21(10.2%)
February	14(6.6%)	August	18(8.4%)
March	19(8.9%)	September	18(8.4%)
April	20(9.7%)	October	18(8.4%)
May	18(8.4%)	November	20(9.4%)
June	16(7.5%)	December	14(6.6%)

Table 03: Frequency and Percentage of different causes of death

Causes of death	Frequency	Percentages
Assault	49	23.1%
RTA	45	21.2%
Fire arm	52	24.5%
Drowning	22	10.3%
Hanging	12	5.6%
Strangulation	14	6.6%
Poisoning	8	3.9%
Train accident	6	2.8%
Burn	4	1.8%
Bomb blast	0	0

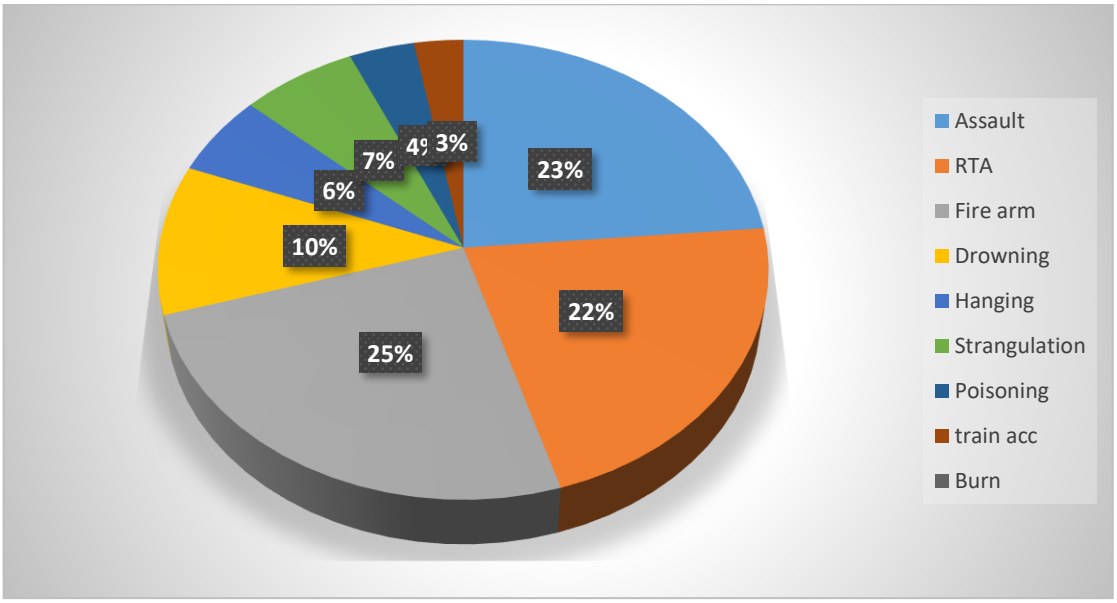

Figure 02. Distribution of Causes of death

DISCUSSION

Several researchers have published regional data on forensic medicine, contributing to the scientific understanding of this field. For instance, a study by Gupta M et al. (2018) analyzed 104 deceased individuals who received no treatment prior to death. Their findings showed a male predominance, with 67.3% (70 cases) being male and 32.7% (34 cases) being female. Notably, the highest percentage of cases (29.8%) fell within the 20–40-year age range, which aligns with our own results. This consistency highlights the importance of regional data in understanding patterns and trends in forensic medicine. [7]. A study by Ardawan J. Rastan et al. (2005) presented differing findings compared to our results. The mean age in their study population was 68.7 years, significantly higher than ours. Additionally, their study reported varying causes of death, with cardiac issues accounting for 49.8% of cases, followed by sepsis (14.9%), respiratory problems (8.3%), surgery-associated complications (8.3%), cerebral causes (6.4%), and abdominal issues (4.7%). In contrast, our study focused on sudden deaths primarily due to injuries or attacks, with a notable mention of neglect in elderly cases as a contributing factor to mortality. The discrepancy in findings highlights the complexity and variability of mortality patterns across different populations and contexts. [8]. The difference in findings between the two studies can be attributed to the specific focus on cardiac surgery patients who died perioperatively. In contrast, a study by Miraza Farhat et al. (2013) examined firearm-related deaths, finding that the majority (98.62%) were homicidal, while a smaller proportion (1.37%) were suicidal. The study revealed that the 16–30-year age group was most affected, accounting for 50.52% of cases. Furthermore, males comprised 94.84% of the cases, while females accounted for 5.16%. This study

highlights the patterns of firearm injuries in medico-legal deaths, emphasizing the prevalence of homicide and the demographic characteristics of the victims. [9] A study by Ullah A et al. (2014) analyzing 2025 autopsies of homicidal cases found that males accounted for 67.24% (1375 cases) and females for 32.76% (670 cases). Firearms were the most common cause of death, responsible for 60.14% (1230 cases) of the fatalities. While this study shares some similarities with our findings, there are notable differences, likely due to regional cultural factors. The study was conducted in the KPK province, where carrying weapons is prevalent, even among young individuals, which may contribute to the high incidence of firearm-related deaths. This cultural context may explain the discrepancies between their results and ours [10]. A study by Farhat Hussain Mirza (2013) analyzing 2090 autopsies found that road traffic accidents (RTA) accounted for 27.8% (581 cases) of the fatalities. Males were predominantly affected, comprising 87.8% (510 cases) of the RTA deaths, while females accounted for 12.2% (71 cases). The age group most commonly involved was between 19 and 40 years. The study also revealed that head injuries were the leading cause of death, responsible for 66.4% (386 cases) of the fatalities, followed by chest injuries, which accounted for 14.5% (84 cases) of the deaths [11]. Qayas Ahmad et al (2016) evaluating the confirmatory diagnostic accuracy of autopsy reported that 65% diagnosis was missed while 35% of the diagnosis was in accordance with the autopsy findings [12]. Autopsy plays a crucial role in serving justice for both the victim's family and society, having a lasting impact on others. It helps determine the cause and manner of death, distinguishing between suicide and homicide. This distinction is particularly important given the prevalence of suicidal tendencies among individuals with depression. By providing clarity on the circumstances surrounding a death, autopsy findings can bring closure and justice to those affected [13]. Our study had limitations, and we recommend that a nationwide study be conducted to compare various regions, taking into account cultural values and diverse conditions. This would provide a more comprehensive understanding of the topic and help identify regional variations and patterns.

CONCLUSION

The analysis revealed that males, particularly those in the 25-35 age group, are disproportionately represented in medicolegal cases, with firearm injuries being the leading cause of death, followed closely by assault and road traffic Accidents (RTA). This suggests that young adult males are more likely to be involved in high-risk activities, making them vulnerable to violent deaths. These findings underscore the need for targeted interventions and preventive measures to address the root causes of such incidents and reduce mortality rates among this demographic.

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