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Profile of Medico legal Autopsies Conducted at Tertiary Medico-legal Centre in Northern India

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Abstract

The present study is a retrospective study of medico-legal autopsies conducted in the Department of Forensic Medicine and Toxicology MMIMSR Mullana, Ambala, India, from Jan 2016 to December 2020. During this period, 793 cases of medico-legal autopsies were done in the mortuary of MMIMSR, Mullana, Ambala. The majority of victims were male 670 (84.48 %) cases and female 123 (15.52%) cases. A maximum number of post mortem done in the age group 20-40 years was 385(48.56 %) cases and minimum in age group 0-10 year were 18 (02.26%) cases. In our study, 601 (75.78%) were married, 169 (21.31%) unmarried, and unknown 23 (02.99%) cases. Hindus were 660 (83.22%), Muslim 50(06.30%), and Sikh 83 (10.48%) cases. The total number of deaths from rural areas was 406(51.20%) cases, which is slightly higher than urban area 387 (48.80%) cases. Manners of death due to natural causes were 38 (04.97%) cases and unnatural 755 (95.20%) cases. In unnatural, (accidents 551 (69.44%), Suicides 186 (23.44%) and homicides 18 (02.24%) cases). A maximum number of death due to Head injury were 235 (29.64%), shock & hemorrhage 188 (23.70%), poisoning 124 (15.64%), others-skeleton and visceral injuries 81 (10.22%), hanging 44 (05.54%), heart attack 38(04.78%), Drowning 23(02.90%), Electrocution 14 (01.76%), strangulation 13(01.64%), burns 11(1.38%), alcoholic 10(01.26%), septicemia 10(01.26%) and snake bite 2(00.26%)cases. A maximum number of deaths occurring between 0-6 hrs of injury was 395(49.82%) cases, and a minimum number of deaths in 24-48 hrs of injury was 22(02.77%) cases.

Keywords: Autopsy, Hanging, Natural death, Poisoning, Unnatural death.

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Introduction

The term autopsy originated from ancient "Autopsia." Autopsy means ("Autos = self, Opsis = view) to see for oneself.[1] Necropsy (necros = dead, opsis = view) is the most accurate term for investigating the dissection of the dead body, but the autopsy term is commonly used and more popular.

There are two types of autopsies: forensic and clinical

Imhotep[2] is 2980-2900 BC considered a first medico-legal expert. Who were the chief justice and chief physician to Pharaoh Zoster, the king of Egypt? Bartolomeo daVarignana (AD 1302) performed the first medico-legal autopsy in Bologna, Italy.

Postmortem examination[3] is an alternate term used for examination of the body after death to establish the identity of a body, when not known, determine the cause and manner of death, the time since death , and evaluate any disease or injury that may be present.

Whether the death was natural or unnatural and unnatural, whether it is homicidal, suicidal,[4,5] or accidental.

In the case of newborn infants, whenever it was dead born or still born, and some other cases to know the viability of the fetus, an autopsy is conducted.[6]

A complete autopsy involves opening all three body cavities and all cranial, thoracic, and abdominal cavity organs.

Section 174 and 176CrPc code[7] of criminal procedure (CrPc) mentions the concept of medico-legal autopsy during investigations of a sudden, suspicious and unnatural death.[8]

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All cases of unnatural death require complete and partial examination along with circumstantial evidence needed to ascertain the cause of death.

Aims and Objective

1. Demographic (Sex, age, religion, and area-wise) distribution of death.
2. Identity of an unidentified dead person
3. Whether death is natural or unnatural
4. Cause of death, time since death, and time between death and post mortem.

Material and Method

The present study is a retrospective study of medico-legal autopsies conducted in the Department of Forensic Medicine and Toxicology MMIMSR Mullana, Ambala, India, from

Jan 2016 to December 2020. During this period, 793 cases of medico-legal autopsies were done in the mortuary of MMIMSR, Mullana, Ambala. The collection and process of data were made on Microsoft Office Excel 2007. The data was collected using a pre-designed format from post mortem register/records/ inquest papers and post mortem reports maintained in the department by keeping confidentiality strictly intact.

Results

Table 1: Sex wise distribution of cases

Sex	*No. of cases*	*Percentage*
Male	670	84.48
Female	123	15.52
Total	793	100.00

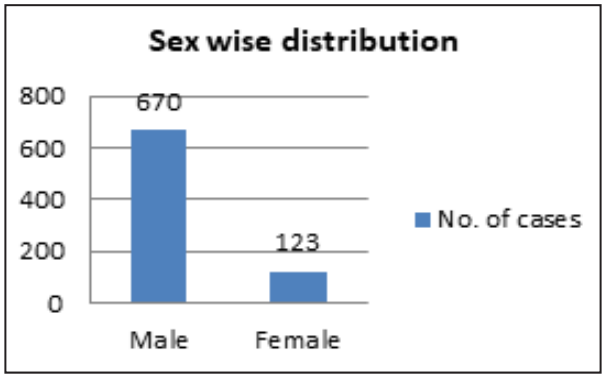

Figure 1: Sex wise distribution of cases

Table 2: Age wise distribution of cases

Years	*Male*	*Female*	*Total cases*	*Percentage*
0-10	16	02	18	02.26
10-20	76	19	95	11.98
21-30	174	42	216	27.24
31-40	144	25	169	21.32
41-50	116	14	130	16.40
51-60	84	14	98	12.36
>60	60	07	67	08.44
Total	670	123	793	100.00

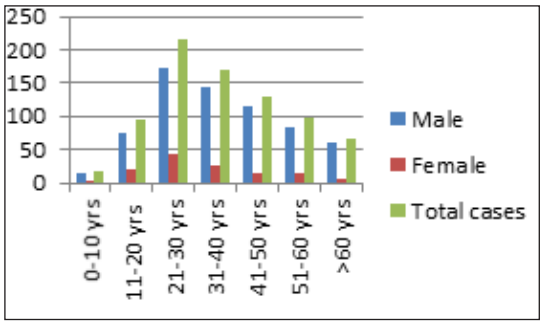

Figure 2: Age-wise distribution of cases

Table 3: Martial status distribution

	No. of cases	*Percentage*
Married	601	75.78
Unmarried	169	21.31
Unknown	23	02.99
Total	793	100.00

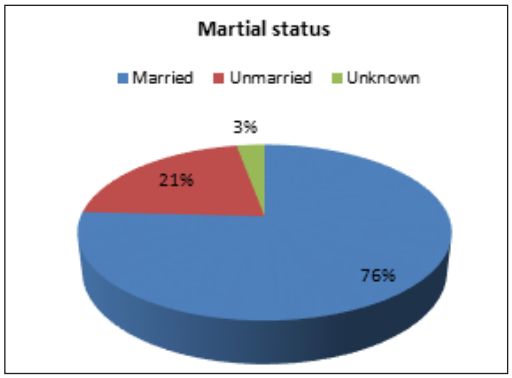

Figure 3: Martial status Distribution

Table 4: Area-wise Distribution of cases

	No. of cases	*Percentage*
Rural	406	51.20
Urban	387	48.80
Total	793	100.00

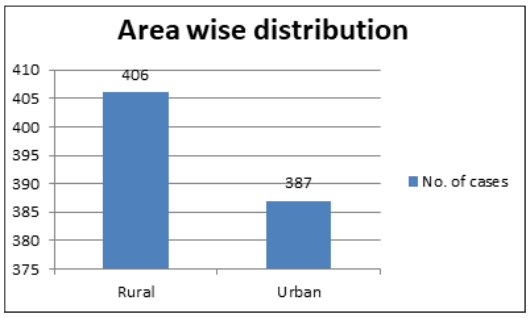

Figure 4: Area Wise Distribution of cases

Table 5: Religion Wise Distribution of cases

	No. of cases	Percentage
Hindu	660	83.22
Muslim	50	06.30
Sikh	83	10.48
Total	793	100.00

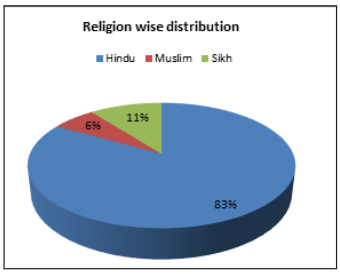

Figure 5: Religion Wise Distribution of cases

Table 6: Manner of Death

		No. of cases	Percentage
Natural	Heart attack	38	04.97
Unnatural	Homicide	18	02.24
	Suicide	186	23.44
	Accident	551	69.44
Total		793	100.00

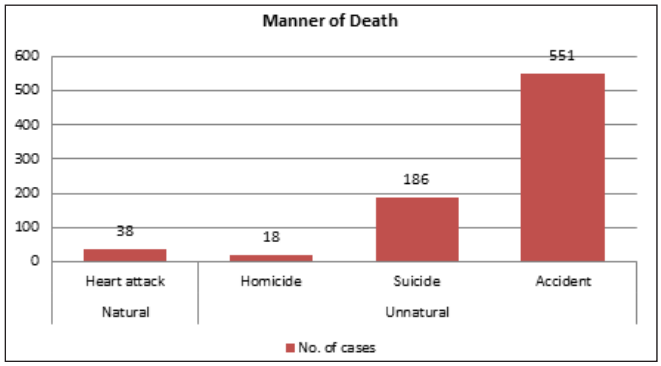

Figure 6: Manner of Death

Table 7: Cause of Death

	No. of cases	*Percentage*
Heart Attack	38	04.78
Shock & Hemorrhage	188	23.70
Head injury	235	29.64
Poisoning	124	15.64
Hanging	44	05.54
Strangulation	13	01.64
Electrocution	14	01.76
Drowning	23	02.90
Alcoholic	10	01.26
Snake Bite	02	00.26
Burns	11	01.38
Septicemia	10	01.26
Skeleton & visceral injuries	81	10.22
Total	793	100.00

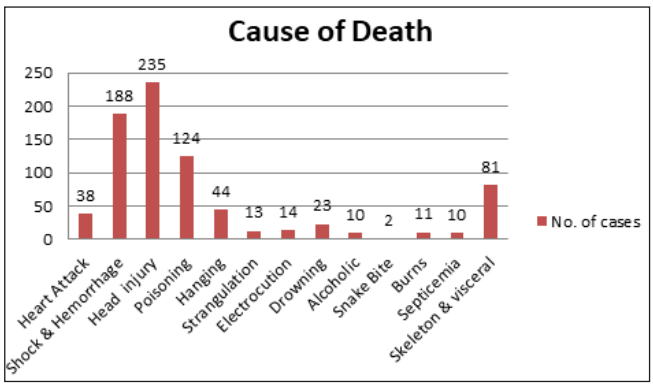

Figure 7: Cause of death

Table 8: Time between Injury and Death

Hours	*No. of cases*	*Percentage*
0-6	395	49.82
6-12	39	04.92
12-24	36	04.54
24-48	22	02.77
48-72	24	03.02
>72	62	07.82
Not Applicable	215	27.11
Total	793	100.00

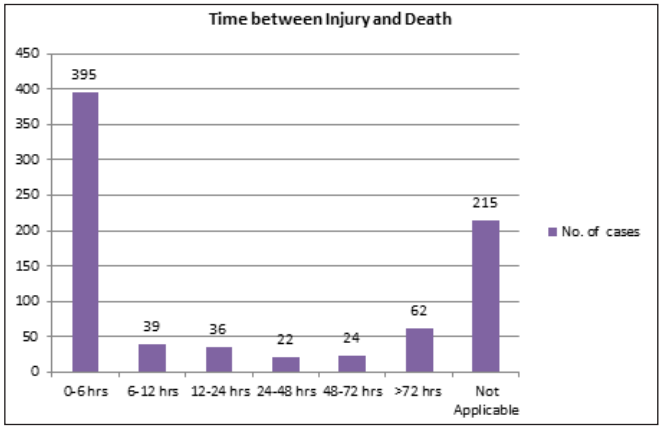

Figure 8: Time between Injury and Death

Table 9: Time between Death and Post Mortem

Hours	*No. of cases*	*Percentage*
0-6	60	07.56
6-12	158	19.92
12-24	397	50.08
24-48	97	12.24
48-72	34	04.28
>72	47	05.92
Total	793	100.00

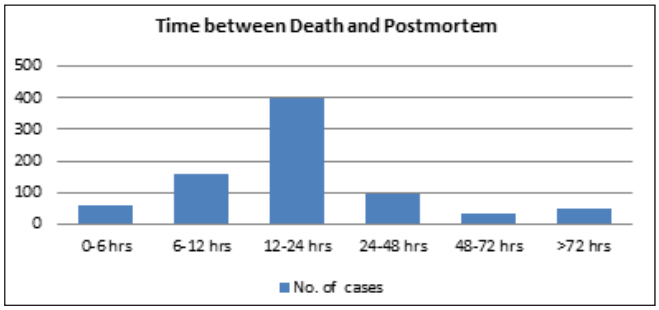

Figure 9: Time between death and postmortem examination

Discussion

As in Table 1, Most victims were male 670 (84.48 %) cases and female 123 (15.52%) cases. A similar finding was observed in a study of Mujadlimath *et al*.[9] Costache *et al*.[10] Radhakrishna *et al*.[11],

Nora Abdellah *et al*.,[12] Khanna *et al*.,[18] Saurav *et al*.,[21] Patel JB[22] and Wasnik RN *et al*.[23] males were in the range of 76.77% to 91.00% and females 9.00% to 24.23% cases.But the Bhabhor *et al*.[17] observed a slightly lower incidence of males from 54.57 % to 69.00% cases. This is because males are generally earning members of society, and females usually doing household activity. So males are more prone to accidents, suicide, and violence-related deaths.

In a study conducted by us, the maximum number of post mortem done in the age group 20-40 years were 385(48.56 %) cases, and minimum in age group 0-10 years were 18(02.26%) cases (Table 1). Thus, the finding of the study are consistent with the findings of Mujalimath *et al*.,[9] Radhakrishna *et al*.,[11] Abdellah,[12] Anderson *et al*.,[13] Khana *et al*.,[18] Junaidi,[19] Patel *et al*.,[22] and Wasnik *et al*.[23]

According to Table 3 in our study 601 (75.78%) were married, 168(21.31%) unmarried and unknown 23 (02.99%) cases. Our study is homologous to the studies done by authors Mujalimath *et al*.,[9] Radhakrishna *et al*.,[11] and Junaidi.[19]

As per Table 4, Hindus were 660 (83.22%), Muslim 50 (06.30%), and Sikh 83(10.48%) cases. Our finding resembled the study done by authors Mujalimath *et al*.,[9] Radhakrishna *et al*.,[11] Khana *et al*.[18] and Junaidi *et al*.,[19] Kumar P *et al*.,[24] where it ranged Hindu 83.22% to 88.00%, Muslim 06.3 to 08 % cases and others 04 to 08 % cases.

As depicted in table no 5, the total number of deaths from rural areas was 406 (51.20%) cases, which is slightly higher than urban area 387 (48.80%) cases. Our study is Homologous to a study done by Azizuddin *et al*.[19]who noticed a higher incidence of death in Rural area 57.5 to 67.9% as compared to urban areas 22.5% to 32.1% cases. But findings of Marina *et al*.[10] are contrary to our study who noticed a higher incidence in urban areas 83.93%, than rural areas. This difference is due to prevailing population dynamics across India.

As depicted in Table 6, Manners of death due to natural causes were 38(04.97%) cases and unnatural 755(95.20%)cases. Our study is almost consistent with a study done by Junaidi *et al*.,[19] Prithviraj *et al*.,[15] who noted natural ranging from 04% to 6.9% and unnatural 93.1% to 96% But Mujalimath *et al*.,[9] Radhakrishna *et al*.,[11] Shrivastava *et al*.,[14] and Escoffery *et al*.,[16] noticed significantly higher incidence of death due to natural 17.4% to 29.21% and unnatural 70.71% to 82.6% cases.

According to Table 7, Number of death due to Head injury were 235(29.64%), shock& hemorrhage 188(23.70%), poisoning 124(15.64%), Skeleton & visceral injuries 81(10.22%), hanging 44(05.54%), heart attack 38(04.78%), Drowning 23(02.90%), Electrocution 14 (01.76%), strangulation 13(01.64%), burns 11(1.38%), alcoholic 10(01.26%), septicemia 10 (01.26%) and snakebite 2(00.26%)cases. Our findings are similar to Mujalimath *et al*.,[9] Abdellah *et al*,[12] Bhabhor *et al*.,[17] Junaidi *et al*.,[19] Patel *et al*.[22] and Wasnik *et al*.[23] Poisoning 12.13 to 17% cases and asphyxial death 8.6% cases.The trends of RTA in our study are similar to study of Radhakrishna *et al*.,[11] Junaidin *et al*.,[19] Amakiri *et al*.,[20] and Odesanmi *et al*.,[25] RTA ranged 55.7% to 78% cases, In study conducted by Radhakrishna *et al*.,[11] found that death due to hanging were 40% and poisoning 25% cases which are also on higher side as compared to study done by us 5.54% and 15.64% cases respectively. In studies done by Mujalimath *et al*.,[9] and Shrivastava *et al*.,[14] noticed higher 22.6% to 37.5% cases of death due to burns as compared to our study of burns 1.38% cases. Deaths due to poisoning and hanging are generally found to be suicidal deaths because of the easy availability of commonly used pesticides /insecticides by the farming community to spray in fields or for preserving food grains at homes. The hanging death is generally found to be suicidal as seen in other parts of the country as an easy mode of committing suicide among the population.

Although this tertiary center is located in rural areas of this part of the state with no national highway nearby except one interstate highway, the maximum number of fatalities is 551(69.99%) in our study due to RSA/RTA. And above that 81 deaths, which are included in others skeleton and visceral injuries, are generally found to be due to RTA/RSA. Individual long bones of lower limbs/upper limbs or injuries to abdominal viscera like liver spleen had caused death. So this figure of RTA deaths goes even higher 632 (80.20%) deaths.[20] This might be due to the increasing number of fast-moving vehicles on the road and rash driving under the effect of intoxicants. Another reason for this is people are not following road safety norms while driving on the road.

As shown in Table 8, 395 (49.82%) persons died within 0-6 hours after sustaining injuries or any natural causality. 183 (23.07%) persons died within 6-72 hours after suffering any trauma disease. The rest of the cases were poisoning/snake bite, heart attack, and alcoholism, etc. in which time was mentioned as not applicable between injuries and death 215(27.11%) cases.

As per Table 9, the time elapsed between death and postmortem was determined as 12-24 hours in 397(50.08%) cases which form almost half of cases. In 81 (10.20%) cases, this time was estimated to be 48-72 hours or even more. In only 60(07.56%) cases, autopsy[26] was conducted within 6 hours of death.

Conclusion

793 autopsies were included in this study, and males were more than females. A maximum number of deaths were in the age group 20-40 years. Married persons constituted the majority compared to unmarried because young married persons are more exposed to the external environment being the earning member of society. Hindus being a majority in this part of the state, formed the bulk of cases. Shock & hemorrhage was the most common cause of death in RTA cases. In suicide, poisoning and hanging are the leading causes death in medico-legal cases. Suicidal deaths due to poisoning result from the easy availability of commonly used pesticides/insecticides by farming communities to spray in the field or preserve food grains at home. The hanging death is generally suicidal, as seen in other parts of the country as easy mode of committing suicide amongst the population.

The maximum number of deaths occurred in the first 6 hours (Golden hours) after sustaining injuries. The maximum number of post mortem conducted after 12-24 hours after death. The study will help policymakers make changes or improve medical sciences and public health policy for effective implementation of medical and public health services to the community.

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