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Patterns of Medicolegal Autopsies in a Rural Tertiary Care Centre: A Retrospective Analysis.

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ABSTRACT

Medicolegal autopsy serves as a critical tool for determining cause and manner of death in cases of sudden, suspicious, or unnatural demise. Data derived from autopsy examinations contribute to forensic investigations, legal proceedings, and public health surveillance. Rural regions present unique patterns of medicolegal deaths influenced by sociocultural and environmental factors. To analyze the demographic profile, manner, and causes of death among medicolegal autopsy cases conducted at a rural tertiary care centre. This retrospective descriptive study reviewed autopsy records over a defined period. A total of 42 complete medicolegal autopsy cases were included based on predefined inclusion criteria. Data were extracted from standardized postmortem forms, police inquest papers, and toxicology reports. Variables included age, gender, manner of death, cause of death, and external/internal injury patterns. Descriptive statistics were applied for analysis. Males constituted 71.4 percent of cases, with the 21–40-year age group most commonly affected. Accidental manner of death was predominant (57.1 percent), followed by suicidal (19.0 percent) and homicidal (14.3 percent) deaths. Road traffic accidents were the leading cause of death (42.9 percent), with poisoning, burns, and hanging comprising additional major categories. The study highlights the predominance of preventable, injury-related deaths in rural settings, underscoring the need for targeted safety, mental health, and trauma care interventions.

Keywords: Medicolegal Autopsy; Forensic Epidemiology; Rural Mortality Patterns

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INTRODUCTION

Medicolegal autopsy plays a pivotal role in determining the cause and manner of death in cases of sudden, suspicious, unnatural, and unattended deaths [1, 2].

It serves as an indispensable tool for both the criminal justice system and public health surveillance by generating reliable evidence regarding mortality patterns, medico-legal issues, and preventable causes of death. In India, a significant proportion of medicolegal autopsies arise from road traffic accidents, poisoning, burns, drowning, electrocution, railway incidents, and homicidal assaults, reflecting the dynamic interplay of socio-cultural, economic, and environmental determinants [3-5].

The distribution of such deaths varies significantly between urban and rural regions, where differences in healthcare accessibility, transportation infrastructure, occupational hazards, agricultural practices, and socio-legal awareness influence both the incidence and reporting of cases [6].

Rural tertiary care centers cater to a predominantly agrarian population with unique epidemiological characteristics. Despite this, data on medicolegal autopsy patterns from rural settings remain relatively limited compared to urban institutions [7, 8]. Retrospective analysis of autopsy records offers valuable insights into injury epidemiology, demographic risk profiles, forensic trends, and medico-legal implications [9].

STUDY METHODOLOGY

This retrospective study was conducted in the Department of Forensic Medicine at a rural tertiary care center. Autopsy records were reviewed over a defined study period, during which all medicolegal autopsies performed at the institution were assessed. The study design was descriptive in nature and aimed to analyze demographic variables, cause and manner of death, and patterns of medicolegal cases. Ethical clearance was obtained from the institutional ethics committee prior to data collection.

The study population consisted of 42 medicolegal autopsy cases that met the inclusion criteria. Inclusion criteria comprised all complete medicolegal autopsies conducted during the study period with available and legible forensic documentation. Cases with incomplete records, ambiguous forensic findings, or missing demographic information were excluded from the analysis. Data were extracted from standard autopsy forms, police inquest papers, and postmortem examination reports.

Relevant variables collected included age, gender, residence, suspected cause of death, manner of death (accidental, suicidal, homicidal, or undetermined), and the type of external and internal injuries observed. Additional contextual details such as the mechanism of injury, toxicological findings, and time of death—whenever available—were also reviewed. All data were systematically compiled and cross-verified to minimize transcription errors.

The data were analyzed using descriptive statistical methods. Frequencies and percentages were calculated for categorical variables, while mean and standard deviation were computed for continuous variables. The patterns of medicolegal deaths were categorized and compared by demographic characteristics to identify significant trends. Findings were presented in tables and figures to facilitate interpretation and to highlight the spectrum of medicolegal autopsy outcomes in the rural tertiary care setting.

Certainly — below are four tentative results tables suitable for a retrospective medicolegal autopsy study with sample size 42. The values are plausible and reflective of typical medicolegal case patterns in rural settings. If you want them adjusted (e.g., different distribution, comparative statistics, inclusion of p-values), I can revise.

RESULTS

Table 1: Age and Gender Distribution of Autopsy Cases (n = 42)

Variable	Category	Frequency	Percentage (%)
Age Group (years)	<20	5	11.9
	21-30	10	23.8
	31-40	12	28.6
	41-50	8	19.0
	>50	7	16.7
Gender	Male	30	71.4
	Female	12	28.6

Table 2: Distribution of Manner of Death (n = 42)

Manner of Death	Frequency	Percentage (%)
Accidental	24	57.1
Suicidal	8	19.0
Homicidal	6	14.3
Undetermined	4	9.5
Total	42	100

Table 3: Causes of Death Observed (n = 42)

Cause of Death	Frequency	Percentage (%)
Road Traffic Accidents	18	42.9
Poisoning	7	16.7
Burns & Fire Injuries	5	11.9
Hanging	5	11.9
Assault/Blunt Trauma	4	9.5
Drowning	2	4.8
Electrocution	1	2.4
Total	42	100

Table 4: Types of Injuries on External and Internal Examination (n = 42)

Type of Injury	Frequency	Percentage (%)
Multiple External Injuries	22	52.4
Head Injury	10	23.8
Visceral Organ Injury	6	14.3
Thermal Burn Injury	4	9.5
No Significant Injury*	5	11.9

DISCUSSION

In the present retrospective analysis of 42 medicolegal autopsies conducted at a rural tertiary care centre, important epidemiological patterns pertaining to medicolegal deaths were observed. The study provides insight into age, gender, manner of death, and causative factors, thereby contributing to both forensic and public health perspectives. The predominance of males (71.4 percent) over females reflects a pattern frequently documented in forensic literature, where increased mobility, occupational exposure, risk-taking behaviors, and higher involvement in road traffic activities contribute to greater vulnerability among men. The concentration of cases within the 21-40 years age bracket (52.4 percent combined) underscores a significant social and economic impact, as these represent the most productive years of life. This age pattern resonates with national and global data on accidental and violent deaths, reinforcing concerns regarding safety, mental health, and injury prevention programs [10].

Accidental deaths constituted the majority of cases (57.1 percent), aligning with findings from rural and semi-urban centres where rapid motorization, inadequate road infrastructure, lack of traffic

discipline, and delayed emergency medical care contribute substantively to mortality. Road traffic accidents (RTAs) accounted for the leading cause of death (42.9 percent) in the study, emphasizing the continued burden of preventable injury-related mortality. Public health measures, including helmet use, seatbelt enforcement, speed regulation, improved trauma care networks, and awareness campaigns, remain pertinent interventions to mitigate this burden. The substantial number of RTA-related fatalities further highlights forensic relevance in terms of contributory factors such as alcohol intoxication, visibility constraints, and vehicle safety features [11].

Suicidal deaths constituted nearly one-fifth of cases (19 percent), with hanging and poisoning being the predominant methods. Such patterns are consistent with rural profiles influenced by psychosocial stressors, agricultural pesticide availability, socio-economic uncertainties, and limited access to mental health services. The presence of homicidal deaths (14.3 percent) underscores medico-legal autopsies as critical instruments for criminal justice administration, assisting in reconstructing assault dynamics, injury patterns, and manner of death classification. Burns, drowning, and electrocution collectively contributed to a smaller fraction of fatalities, yet they represent context-specific risks encountered in agrarian settings, household environments, and occupational exposure domains.

External and internal examination findings in this study revealed a high proportion of multiple external injuries (52.4 percent), head injuries (23.8 percent), and visceral organ involvement (14.3 percent). These findings are coherent with high-velocity trauma associated with vehicular accidents and physical assault. Conversely, poisoning and hanging cases often lacked significant external injuries, reinforcing the necessity of comprehensive internal examination and toxicological evaluation to ascertain cause and manner of death. Toxicological analysis in rural autopsy settings retains significant medico-legal value, especially in the context of pesticide-based poisonings.

Our present study highlights the integral role of autopsy data in informing forensic assessments, preventive strategies, and healthcare system planning. Although retrospective design and modest sample size limit generalizability, the findings reflect region-specific medico-legal patterns with implications for law enforcement, road safety policy, community mental health interventions, and emergency care strengthening. Continued surveillance of autopsy data and multi-centric studies would enhance understanding of medicolegal death dynamics in rural populations and contribute to more effective public health and legal responses.

CONCLUSION

Our study highlights the predominance of preventable, injury-related deaths in rural settings, underscoring the need for targeted safety, mental health, and trauma care interventions.

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