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Pattern, practices, and challenges in medicolegal cases at a rural tertiary care emergency department: a prospective original research study from western India

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Abstract

Background: Medicolegal casework is an important component of emergency medical practice, but the practical handling of such cases is often affected by inadequate training, operational uncertainty, and coordination gaps between healthcare providers and law-enforcing agencies.

Objective: To study the pattern of medicolegal cases received at a rural tertiary care emergency department, evaluate the practices followed in their examination and reporting, and identify challenges faced during execution of medicolegal duties.

Methods: A prospective, record-based original research study was conducted at the emergency department of Shree Krishna Hospital, Karamsad, Gujarat, from 1 July 2023 to 30 June 2024. Data were collected from the medicolegal register, clinical case records, medicolegal reports, and investigation reports. All medicolegal and potential medicolegal cases were included, except cases brought only for DNA sample collection.

Results: A total of 1614 cases were analyzed. Adults above 18 years constituted 83% of cases, and males comprised 70%. Accidental cases formed the largest category (66.9%), followed by assault (9.1%), suicidal cases (8.3%), natural cases (7.5%), and other medicolegal categories (8.2%). Among accidental cases, road traffic accidents accounted for 70.89%. The overall institutional practices in handling medicolegal cases were fair, but important practical challenges included police registration delays, difficulties related to postmortem-linked dead body handling, and unnecessary referrals from peripheral centres.

Conclusion: Medicolegal case handling at the study centre was generally satisfactory; however, important operational gaps remain. Standardized protocols, regular training, and improved coordination with police and referral centres may further strengthen medicolegal services in rural tertiary care settings.

Introduction

Medicolegal cases are encountered routinely in emergency departments and require simultaneous attention to patient care, legal documentation, evidence preservation, and communication with investigating authorities. In practice, the attending doctor is expected to identify whether a case has medicolegal implications, initiate appropriate reporting, document findings accurately, preserve relevant samples, and issue medicolegal opinions when necessary [1]. These responsibilities are especially challenging in busy emergency settings, where treatment priorities, incomplete or misleading history, poor practical training, and lack of administrative clarity may interfere with ideal practice.

In India, much of the medicolegal workload is handled at trauma, casualty, and emergency units. Previous hospital-based studies have consistently shown that young adult males constitute the majority of medicolegal cases and that road traffic accidents account for the largest share, followed by assault,

falls, burns, and poisoning [2-8]. However, most available studies primarily describe epidemiological patterns and give limited attention to the actual practices followed during handling of such cases or the specific operational challenges faced by healthcare professionals.

The Department of Forensic Medicine and Toxicology at our institute undertook medicolegal work in coordination with the Department of Emergency Medicine from 2023 onward. This offered an opportunity to systematically study not only the pattern of medicolegal cases received but also the practical aspects of their handling. The present original research was therefore designed to evaluate the pattern, practices, and challenges related to medicolegal case management in a rural tertiary care emergency department.

Methods

This prospective, record-based original research study was conducted in the Department of Emergency Medicine, Shree Krishna Hospital, Karamsad, Gujarat, over a one-year period from 1 July 2023 to 30 June 2024. The hospital is a rural tertiary care centre receiving a substantial burden of emergency and medicolegal work.

Inclusion criteria comprised all medicolegal and potential medicolegal cases presenting directly to the hospital for treatment, brought for medicolegal examination, referred from other centres for examination or treatment within the purview of medicolegal work, and brought-dead cases. Cases brought only for DNA sample collection were excluded from the study.

Data were collected from the medicolegal register maintained in the emergency department, along with the corresponding clinical files, medicolegal reports, and investigation records, using a predesigned case record form. Variables analyzed included age, sex, manner of occurrence, place and mechanism of incident, and issues encountered during case handling and reporting.

To ascertain the challenges faced during handling of medicolegal duties, a written questionnaire was given to the faculty and residents of Department of Emergency Medicine & Department of Forensic Medicine & Toxicology, who examine the medicolegal cases brought to our institute

The study was entirely record-based. Institutional Ethics Committee approval with waiver of consent was obtained, as no direct patient interaction was involved and no personal identifiers were recorded during data extraction. Confidentiality of patient information was maintained throughout the study.

Results

A total of 1614 cases fulfilled the inclusion criteria during the study period. Adults above 18 years constituted the majority of the cases (83%) is illustrated in Fig. 1., while pediatric cases accounted for the remaining proportion. Males represented 70% of the total study population, indicating a clear male predominance among medicolegal cases.

With respect to manner of occurrence as shown in table no. 1 accidental cases formed the largest category and accounted for 66.9% of all medicolegal cases. Assault cases constituted 9.1%, suicidal cases 8.3%, natural cases 7.5%, and other categories such as age estimation, sexual offences, and alcohol intoxication together accounted for 8.2%. These findings indicate that accidents remain the major contributor to medicolegal workload in the emergency department.

As mentioned in table no. 2 among accidental cases, road traffic accidents constituted 70.89%, making them the single largest subgroup. Domestic accidents accounted for 13.0%, industrial accidents for 6.2%, and the remaining cases were classified under miscellaneous categories such as snakebite, railway injury, bee sting, scorpion sting, and lightning . In domestic accidents, falls constituted the most frequent mechanism, whereas machine-related trauma and electrocution were important contributors among industrial injuries.

Within assault cases, blunt force trauma was the most common mechanism of injury. The data also showed in figure no. 2 that a smaller proportion of cases involved sharp force trauma and other forms of assault-related injuries. Overall, the pattern of cases demonstrated a predominance of accidental injuries over intentional injuries and self-harm related cases.

Assessment of practical handling revealed that the overall practices followed in examining and reporting medicolegal cases were fair. However, several operational challenges were identified during the study period. These included delay or difficulty in police registration of cases, issues related to handing over of dead bodies without postmortem examination in selected situations, and unnecessary or unclear referrals from peripheral health centres. These challenges affected workflow and created uncertainty despite overall acceptable institutional practice.

Discussion

The present study demonstrates that medicolegal work at a rural tertiary care emergency department is dominated by accidental cases, particularly road traffic accidents, with a clear predominance of adult males. This pattern is consistent with findings from several Indian hospital-based studies that have similarly reported high proportions of young male victims and road traffic accidents as the leading category of medicolegal workload [2-8]. The demographic pattern likely reflects greater outdoor mobility, occupational exposure, vehicular travel, and risk-taking behavior among males in the productive age group.

The high proportion of road traffic accidents in the present study reinforces the continued public health and forensic importance of traffic-related trauma in India. At the same time, the study also demonstrates that medicolegal services in emergency departments must be prepared to manage a broad range of other categories, including assault, suicide-related cases, poisoning, industrial trauma, burns, and miscellaneous incidents such as snakebite and railway injuries.

A major strength of this study is that it extends beyond simple epidemiological description and addresses the operational realities of medicolegal case handling. Although practices at the study centre were generally fair, the identified challenges underline the need for stronger systems support. Delay in police intimation or registration can complicate reporting and medico-legal documentation. Similarly, ambiguity regarding postmortem-linked procedures and peripheral referrals can create avoidable confusion for both treating teams and forensic personnel. These findings support the need for regular sensitization of emergency medical officers, better communication pathways with law-enforcing agencies, and institution-specific standard operating procedures for medico-legal work.

Similar challenges have been reported in earlier studies. Gurupur et al. noted poor medico-legal knowledge among emergency personnel and difficulties such as reluctance to register cases, treatment delays, court testimony, and managing police and the public [9]. Mostafa et al. also reported pressure from relatives, psychological stress, and difficulty in handling forensic evidence among physicians, with better knowledge and practice among those who had received postgraduate forensic training [10]. These studies reinforce the need for structured training and stronger institutional support in medico-legal case management.

The findings are especially relevant for rural tertiary care centres, where medicolegal responsibilities may be shared between emergency medicine and forensic medicine teams and where referral patterns from peripheral centres can influence workflow. By documenting both pattern and practical barriers, the study contributes useful evidence for service improvement in clinical forensic medicine.

The study has certain limitations. It was conducted at a single centre and relied on hospital records; therefore, the findings may not fully represent the pattern or practices at other institutions. In addition, some operational issues were inferred from records and institutional experience rather than measured through a separate validated assessment tool. Despite these limitations, the study offers meaningful insight into real-world medicolegal practice in a rural tertiary care setting.

Conclusion

This original research study showed that medicolegal cases at the study centre were predominantly accidental, with road traffic accidents constituting the largest subgroup, and that adult males formed the majority of cases. The institutional practices followed in medicolegal examination and reporting were generally fair, but important operational challenges persisted, particularly in relation to police coordination, postmortem-related procedures, and referrals from peripheral centres. Development of standardized protocols, periodic training of healthcare personnel, and improved coordination between emergency medicine, forensic medicine, and law-enforcing agencies may strengthen medicolegal service delivery and reduce practical difficulties in such settings.

Abbreviations

MLC: Medico-legal case; RTA: Road traffic accident

Declarations

Ethics approval and consent to participate

The study was approved by the Institutional Ethics Committee [Institutional Ethical Committee 2, Bhaikaka University, Karamsad, Gujrat, India; letter number IEC/BU/145/Faculty/25/175/2022 dated 10/06/2023] with waiver of informed consent because it was entirely record-based and involved no direct patient interaction.

Consent for publication

Not applicable.

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Clinical Trial Number: Not applicable

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Tables

Table 1: Distribution of medicolegal cases according to their manner of occurrence (n = 1614)

Type of MLC [manner]	Frequency	Percent
Natural (sudden or attended deaths)	121	7.5
Unnatural		
• Accidental	1079	66.9
• Assault	147	9.1
• Suicidal	134	8.3
Others [age estimation, sexual offences and alcohol intoxication]	133	8.2

Most of the cases presenting as MLC were accidental (67%) in nature, followed by alleged assault (09%).

Table 2: Distribution of accidental cases on basis of site of incident (n =1079)

Distribution of cases labelled as accident	Frequency	Percent
Domestic	145	13.0
Road traffic accident (RTA)	765	70.89
Industrial	67	6.2
Poisoning [external site]	9	0.83
Others [railway etc.]	93	8.61

Most of the cases under accidental category had vehicular involvement (RTA, 71%) followed by domestic ones (13%). All 9 cases of accidental poisoning (1% only) were reported to be outside home.

Figures

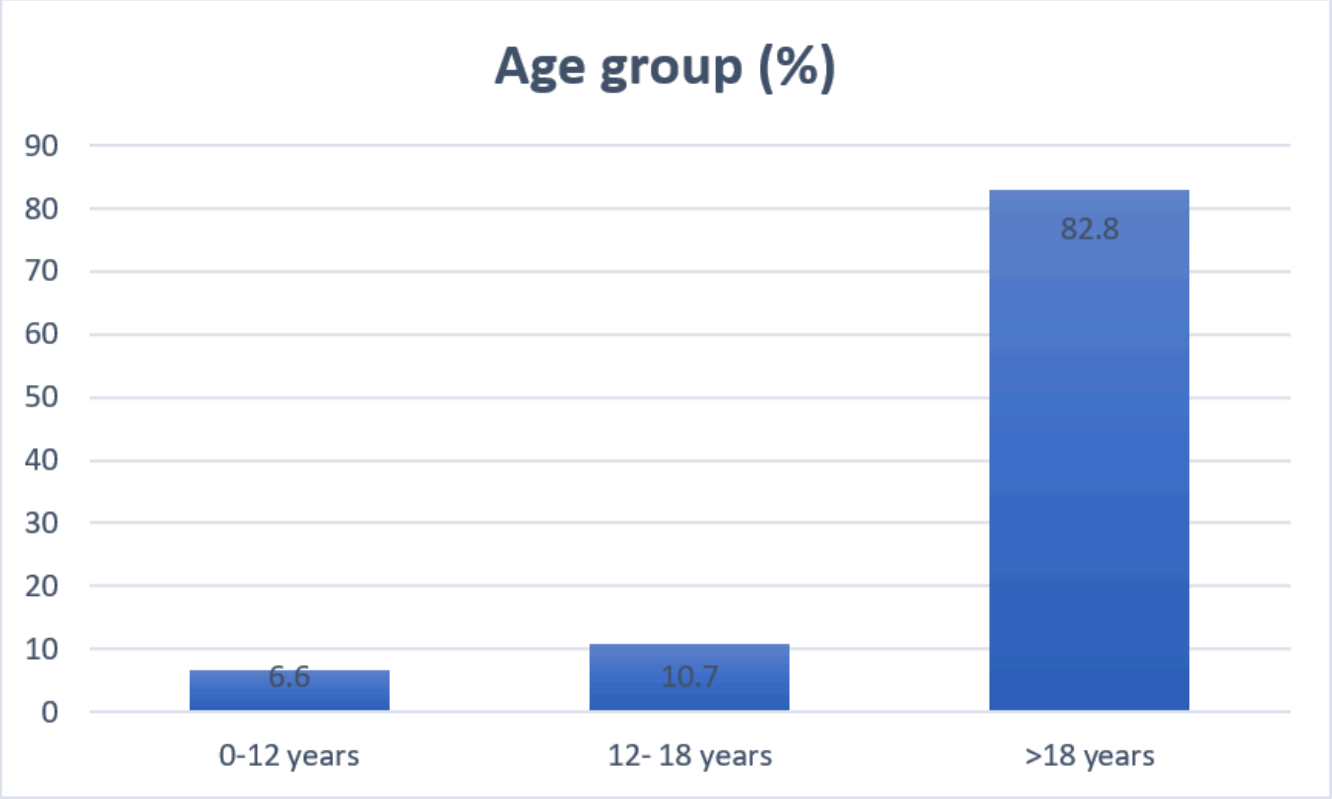


Figure 1

Age wise distribution of medicolegal cases (n = 1614).

From the data above, maximum number of reported medicolegal cases belonged to more than 18 years of age (83%).

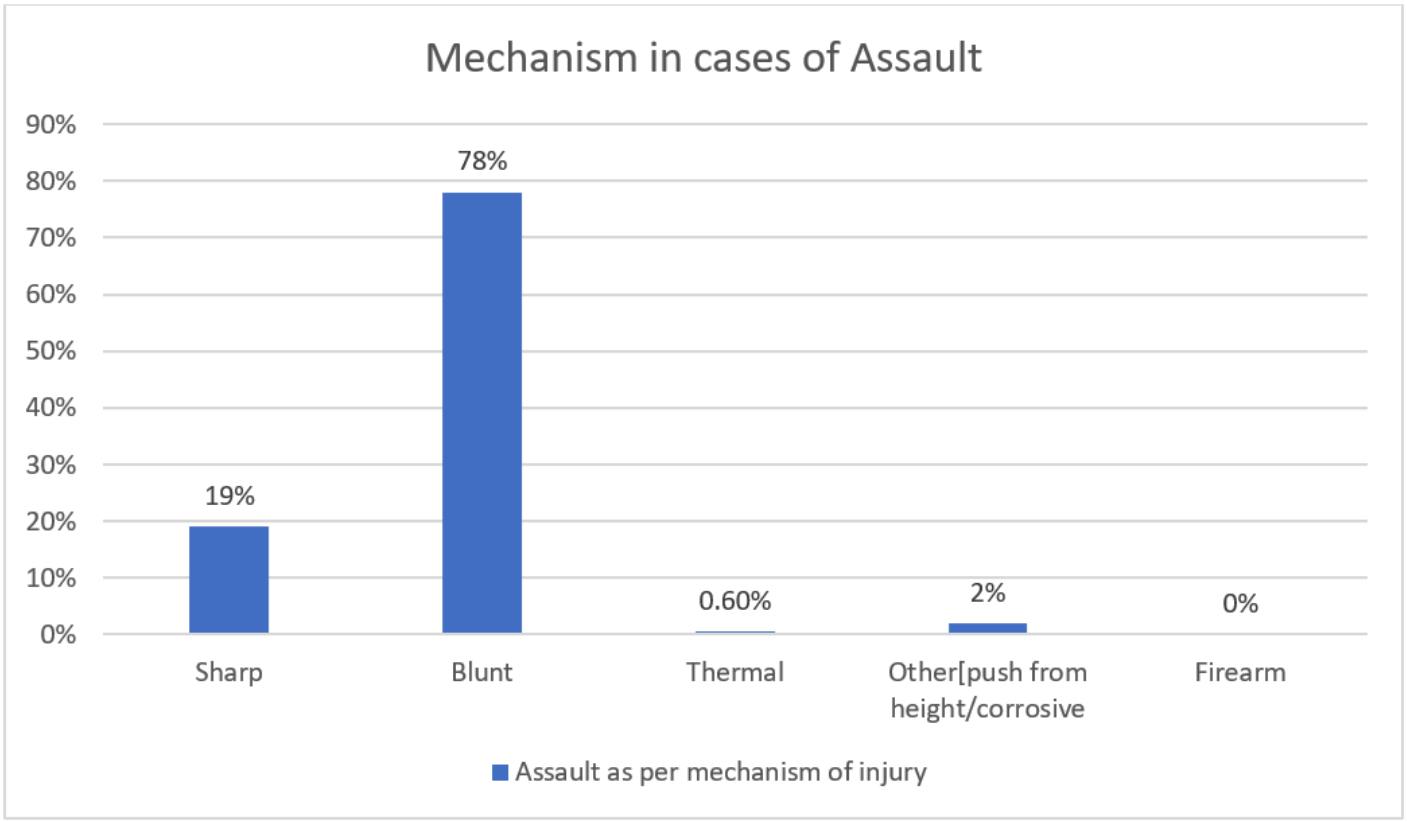


Figure 2

Distribution of cases of assault as per mechanism of injury (n= 147)

Blunt force trauma dominated cases of assaults (78%; n=147) followed by sharp instrument injuries (19%; n=147).