

Patterns Of Clinical Medico-Legal Cases: A Retrospective Study At District Head Quarter Hospital Charsadda

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Abstract

Objective: To determine the pattern and socioeconomic characteristics of medico-legal cases presented to the District Quarter Hospital Charsadda

Methods: This retrospective study analysed 500 patient records from the DISTRICT HEAD QUARTER HOSPITAL CHARSADDA. It focused on various types of medicolegal cases (MLC), including firearm incidents, physical assault, poisoning, road traffic accidents, sexual assault, and sharp injuries. The study utilised a consecutive sampling technique and excluded cases with incomplete records, deceased individuals, and non-Pakistani nationals. Statistical analysis, including the Pearson Chi-Square test, was conducted to explore the patterns of MLC about gender, age, and residence.

Results: The mean age was 30.7±8.6 years. The females were 251(50.20%) while the males were 249(49.80%). The pattern of Medico-Legal Cases (MLC) is presented, highlighting the frequency and percentage for each type. The most common was Road Traffic Accidents having 200(40%) followed by physical assault present in 104(20.80%). Sharp injuries were recorded in 95 cases, representing 19.00% of the total MLC. Poisoning cases were observed in 25 instances, constituting 5.00% of the total MLC. Sexual assault was reported in 56 cases, accounting for 11.20% of the total MLC. Firearm incidents accounted for 20(4%) of the total MLC. Among firearm incidents, 6.4% were female and 1.6% were males. For physical assault, 34% were female and 7.6% were male. Similarly, in poisoning and sexual assault cases, the percentages of females were higher compared to males. Sharp injuries had 26% female and 12% male. There is a significant association between gender and the MLC type ($p<0.001$). For firearm incidents, 5.6% occurred in rural areas and 2.4% in urban areas. A higher proportion of physical assault, poisoning, and sharp injury cases were reported in urban areas. Road traffic accidents occurred more in urban areas than in rural areas. These differences were highly significant ($p=0.001$). The distribution of incidents across different age groups did not show significant variation for any of the incident types ($p=0.88$)

Conclusion: Road Traffic Accidents (RTAs) were the predominant type of Medico-Legal Cases (MLC), followed by physical assault and sharp injuries. Females were more commonly affected by physical assault, sexual assault, and poisoning, while males had a higher prevalence of RTAs.

MeSH Keywords: Accidents, Medicolegal aspects, pattern, Violence, Traffic.

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1. Introduction

A medico-legal case (MLC) is any situation where an individual experiences injury or illness associated with a potential criminal aspect. Such cases involve harm or injury inflicted upon a person, necessitating medical intervention to address their condition.¹ Medico-legal cases are an essential portion of clinical practice and constitute the major entity of emergency care.² These cases include circumstances where clinical information and expertise intersect with legal standards and commitments. They incorporate a large number of situations, including injuries, accidents, criminal demonstrations, negligence claims etc.³ The significance of medico-legal cases stems from several factors. Firstly, they provide a framework for addressing medical emergencies that involve legal implications. When a patient is present with a

condition resulting from a criminal act or accident, it becomes essential to gather evidence, document injuries, and provide medical opinions that can be used in legal proceedings.

Medical and legal issues are important from many perspectives. First, they deal with emergencies presented by medical departments having legal implications. When a patient presents with a condition having suspicion of accident or crime, evidence for legal proceedings should be documented.⁴ Second, medical and regulatory information establishes care standards and accountability for physicians, ensuring high-quality healthcare. The combination of medical and legal aspects also drives medical knowledge and research. When medical professionals provide expert opinions or testify in court, they use their expertise and scientific evidence, to promote learning and resolving legal disputes.⁵ In emergencies, medical and legal considerations are crucial, as physicians must make



quick decisions while handling legal matters and preserving evidence. Immediate medical intervention saves lives and provides accurate documentation for future legal proceedings.⁶

A retrospective study was conducted in Rawalpindi, which reported that the most common medico-legal cases (MLCs) were road traffic accidents (n=1230, 40%) and assaults (n=966, 32%), followed by sharp injuries (19%), poisoning (5%), and firearm incidents (4%).⁷

Reporting medico-legal cases is crucial as it allows for the acknowledgement of their impact and prevalence, the assessment of associated risks, and the prevention of future avoidable harm. The main objective is to initiate legal proceedings promptly to gather significant evidence, facilitating the study of crime patterns in a specific area.⁸ Deaths and illnesses arising from medico-legal causes have been increasing at an alarming rate worldwide. What is particularly concerning is the projected rise in mortality from injuries, surpassing that of infectious diseases. Unfortunately, injuries are still not widely recognised as a major public health concern in our country. It is crucial to gather data on these injuries to evaluate their socioeconomic consequences and formulate effective preventive strategies for the future.⁹

The objective of this study was to determine the pattern and characteristics of medico-legal cases presented to the District Headquarters Hospital, Charsadda.

2. Materials & Methods

This retrospective study utilized records of patients available at District Head Quarter Hospital Charsadda employing consecutive sampling techniques. A total of five hundred registered medicolegal cases were included in the study. The inclusion criteria comprised cases with complete data, including age, gender, residence, and pattern of medicolegal cases (MLC). Cases with incomplete records, which brought dead and non-Pakistani nationals were excluded from the study. Before commencing the research, ethical approval was obtained from the relevant hospital. Since this study was based on records and anonymized cases, informed consent was not required.

The minimum required sample size for the study was calculated to be 387 using the WHO calculator. This calculation was based on a 5% margin of error, a 95% confidence level, and an estimated proportion of 40% for road traffic accidents from a previous study. However, to further increase the power of the study, the decision

was made to include a larger sample size of 500 participants. By including a larger number of participants, the study will have a greater ability to detect meaningful effects and achieve more robust results.

In this study, we recorded the following types of MLC: firearm incidents, physical assault, poisoning, road traffic accidents, sexual assault, and sharp injuries. Firearm incidents involve the use of firearms, resulting in accidental or intentional injuries. Physical assault is intentional physical violence causing harm or injury to someone. Poisoning is the ingestion, inhalation, or exposure to toxic substances causing harm. Road traffic accidents are collisions on public roads involving vehicles, leading to injuries or fatalities. Sexual assault is non-consensual sexual acts forced upon a person (illegal sex with consequences?) Sharp injuries are wounds caused by sharp objects, resulting in cuts or punctures on the body.

Data analysis for this study was conducted using R programming version 4.1.2. Numeric variables, such as age, were analyzed by computing the mean with standard deviation (SD) to describe their central tendency and variability. Categorical variables, including gender, residence, and the distribution of medicolegal cases (MLC), were presented as frequencies with their corresponding percentages to provide a clear understanding of their distribution within the study sample. To examine the patterns of MLC, a Pearson Chi-Square test was performed to compare the distribution of MLC concerning gender, age, and residence. The level of significance was set at $p < 0.05$, indicating that any observed associations with a p-value below this threshold were considered statistically significant.

3. Results

The most common age group was the 31-40 age group (n=202, 40.40%), followed by the 21-30 age group (n=156, 31.20%). The age group of 41 & above had 69 individuals (13.80%). The least common age group was the 7-20 years group (n=73, 14.60%).

The female participants accounted for 251 individuals, constituting 50.20% of the total, while the male participants totalled 249 individuals, making up 49.80% of the population. Among the participants, 248(49.60%) individuals, resided in rural areas, while 252(50.40%) resided in urban areas. (Table 1)

In Table 2, the pattern of Medico-Legal Cases (MLC) is presented, highlighting both the frequency and

percentage for each type. The most common was Road Traffic Accidents having 200(40%) followed by Physical assault present in 104(20.80%). Sharp injuries were recorded in 95 cases, representing 19.00% of the total MLC. Poisoning cases were observed in 25 instances, constituting 5.00% of the total MLC. Sexual assault was reported in 56 cases, accounting for 11.20% of the total MLC. Firearm incidents accounted for 20(4%) of the total MLC.

Table 1: Distribution of gender and residence

variable	Characteristic	N = 500
Gender	Female	251 (50.20)
	Male	249 (49.80)
Residence	Rural	248 (49.60)
	Urban	252 (50.40)

Table 2: Pattern of MLC

Type of MLC	n(%)
Firearm Incidents	20 (4.00)
physical assault	104 (20.80)
Poisoning	25 (5.00)
Road Traffic Accidents	200 (40.00)
sexual assault	56 (11.20)
Sharp Injuries	95 (19.00)

Table 3: Association of MLC type with gender, residence and age group

Variable	Characteristic	Firearm Incidents, N = 20	physical assault, N = 104	Poisoning, N = 25	Road Traffic Accidents, N = 200	sexual assault, N = 56	Sharp Injuries, N = 95	P-value*
Gender	Female	16 (6.4)	85 (34)	21 (8.4)	13 (5.2)	50 (20)	66 (26)	<0.001
	Male	4 (1.6)	19 (7.6)	4 (1.6)	187 (75)	6 (2.4)	29 (12)	
Residence	Rural	14 (5.6)	92 (37)	15 (6.0)	30 (12)	51 (21)	46 (19)	<0.001
	Urban	6 (2.4)	12 (4.8)	10 (4.0)	170 (67)	5 (2.0)	49 (19)	
Age group (years)	7-20	2 (2.7)	14 (19)	3 (4.1)	32 (44)	6 (8.2)	16 (22)	0.88
	21-30	4 (2.6)	35 (22)	7 (4.5)	67 (43)	19 (12)	24 (15)	
	31-40	11 (5.4)	42 (21)	12 (5.9)	75 (37)	25 (12)	37 (18)	
	41 & above	3 (4.3)	13 (19)	3 (4.3)	26 (38)	6 (8.7)	18 (26)	

*Chi-square test

4. Discussion

This study aimed to determine patterns and characteristics of medico-legal cases presented to the District Head Quarter Hospital Charsadda. Our findings showed that the most common age group was the third and fourth decades. Males and females were almost equally represented in the study. In terms of the pattern of Medico-Legal Cases (MLC), Road Traffic Accidents were the most common type, accounting for 40% of the total cases. Physical assault was the second most prevalent (20.80%), followed by sharp injuries (19.00%), poisoning (5.00%), sexual assault (11.20%), and firearm incidents (4%). The gender and residence

Table 3 provides information on the distribution of various characteristics among different incident types, including firearm incidents, physical assault, poisoning, road traffic accidents, sexual assault, and sharp injuries. Among firearm incidents, 6.4% were female and 1.6% were male. For physical assault, 34% were female and 7.6% were male. Similarly, in poisoning and sexual assault cases, the percentages of females were higher compared to males. Sharp injuries had 26% female and 12% male.

There is significant association between gender and the MLC type ($p < 0.001$). For firearm incidents, 5.6% occurred in rural areas and 2.4% in urban areas. A higher proportion of physical assault, poisoning, and sharp injury cases were reported in urban areas. Road traffic accidents had a higher occurrence in urban areas compared to rural areas. These differences were highly significant ($p = 0.001$). The distribution of incidents across different age groups did not show significant variation for any of the incident types ($p = 0.88$).

(rural or urban) of the participants showed significant associations with the distribution of MLC.

In our study, the highest number of casualties occurred in the age range of 20-40 years. Similarly, a study conducted in Nigeria also found that the majority of cases fell within the 20-39 years age group.¹⁰ This observation can be explained by the tendency of individuals in this age range to display higher levels of aggression and impulsiveness. Additionally, they face various challenges, including unemployment and the pressure to establish their identity and succeed in their chosen fields. These factors may contribute to a higher incidence of incidents in this age group.¹¹

In our study, the most prevalent type of MLC was road traffic accidents (40%). Road traffic accidents involve collisions, injuries, or fatalities that occur on public

roads and involve various vehicles such as cars, motorcycles, bicycles, and pedestrians. Pakistan, particularly Peshawar and adjacent areas, face challenges of overpopulation and narrow roads, which contribute to the high occurrence of RTAs. Additionally, factors such as the violation of traffic rules and the use of motorcycles without helmets also contribute to the significant number of RTAs in the region. Similar results were found in a previous study on Rawalpindi reported that RTA was the most common type of MLC (38%).⁷ Similar results were also reported by another research on 1735 medico-legal cases conducted in Nepal.¹²

Our findings revealed that physical assault was the second most prevalent (20.80%). Physical assault refers to intentional acts of physical violence or aggression inflicted on an individual by another person, resulting in physical harm, injury, or pain.¹³ Previous studies conducted on the Rawalpindi population⁷ and Nepal¹⁴ also reported similar findings.

Poisoning involves the ingestion, inhalation, or exposure to toxic substances or chemicals, resulting in harm or adverse effects on an individual's health.¹³ In our study poisoning was found in 5%. The lower number of cases can be due to the death of some cases (which were excluded) and management at a nearby primary care facility by gastric lavage. A previous study in Pakistan reported that poisoning was 4.33%.⁷ A scoping review encompassing 110 studies, including case reports, was conducted to explore suicide and deliberate self-harm in Pakistan. The results revealed that the ingestion of poisons ranked among the top three most common methods for suicide in the country. Specifically, insecticides and pesticides were frequently utilized by a majority of individuals as the chosen poisons. These substances are easily accessible in urban households and widely employed in agricultural practices in rural areas. In terms of medications, such as analgesics and psychotropics, they were not extensively employed as means for committing suicide. However, in cases of deliberate self-harm within urban areas, self-poisoning with medications, particularly benzodiazepines, emerged as the prevailing method. Conversely, self-poisoning, in general, exhibited a higher prevalence in both suicide and deliberate self-harm incidents occurring in semi-urban or rural areas.¹⁵

We found that the firearm injury was 4%. Firearm incidents involve the discharge or use of firearms, including accidental or intentional injuries caused by firearms.¹⁶ The findings of our study align with previous

research indicating that firearm injuries are a significant public health issue.¹² The 4% prevalence of firearm injuries highlights the importance of understanding the contributing factors and implementing preventive measures to reduce such incidents.

Sexual assault involves non-consensual sexual acts or activities forced upon an individual without their consent, often involving physical force, coercion, or manipulation.¹⁷ The frequency of sexual assault in our study was found to be 11.20%. It is important to note that sexual assault can occur to individuals of all genders, including those below the age of 16. The expected number of cases can be quite high but the social restriction the reporting is much less. Many previous studies conducted in Pakistan showed that sexual assaults are common in Pakistan.^{18,19}

In our study conducted, we found a significant relationship between gender and the distribution of Medico-Legal Cases (MLC). Females were more commonly affected by physical assault, sexual assault, and poisoning, while males had a higher prevalence of road traffic accidents (RTAs). This can be attributed to various factors. Societal and cultural norms play a role, as traditional gender dynamics and power structures contribute to higher rates of physical and sexual assault against females.²⁰ Gender-based violence, including domestic violence and sexual harassment, further contributes to the increased incidence of these types of MLC among females. Males are more likely to engage in activities with higher risks, such as driving vehicles and participating in physically demanding occupations, which explains the higher prevalence of RTAs among males.¹³ Females may face limited access to education and employment opportunities, which can affect their exposure to certain types of MLC. Additionally, societal stigma and barriers in reporting cases of sexual assault or seeking legal assistance may result in underreporting or lower representation of male victims in MLC data.¹²

The present study has several notable limitations that should be acknowledged. Firstly, the retrospective design employed in this study may introduce selection bias, as it relies on the availability and accuracy of existing data. This could potentially affect the generalizability of the findings. Secondly, the sample size of the study was relatively small, which may limit the statistical power and precision of the results. It is important to interpret the findings with caution, considering the limited sample size. Additionally, conducting the study in a single centre may limit the

diversity and representativeness of the study population, thus impacting the external validity of the findings. Future studies with larger sample sizes and multi-centre approaches are warranted to validate and generalize the results more effectively.

5. Conclusion

Road Traffic Accidents (RTAs) were identified as the predominant type of MLC, followed by physical assault and sharp injuries. Poisoning, sexual assault, and firearm incidents were also notable categories, albeit with relatively lower frequencies. Importantly, our study revealed significant associations between gender and residence (rural or urban) with the distribution of MLC. Females were more commonly affected by physical assault, sexual assault, and poisoning, while males exhibited a higher prevalence of RTAs.

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Contributions:

N.N.B, U.K.K, I.U, - Conception of study

I.U, F.N - Experimentation/Study Conduction

N.N.B, I.U, - Analysis/Interpretation/Discussion

N.S, I.U, F.N, F.I - Manuscript Writing

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