



Original Article



Prevalence of Medicolegal Cases During Covid-19 Pandemic Lockdown; A Local Experience

Tasneem Murad¹, Sajjad Ahmad², Riffat Ramzan³, Filza Ali⁴, Riffat Masood⁵ and Sanaila Gull Sana⁶

¹Department of Forensic Medicine, Islamic International Medical College, Islamabad, Pakistan

²Department of Emergency, Benazir Hospital, Rawalpindi, Pakistan

³Pakistan Institute of Medical Sciences, Islamabad, Pakistan

⁴Rawalpindi Medical College, Rawalpindi, Pakistan

⁵Foundation University, Rawalpindi, Pakistan

⁶Federal Medical College, Islamabad, Pakistan

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*Corresponding Author:

Sanaila Gull Sana
Federal Medical College, Islamabad, Pakistan
sanaila.gu.sana@gmail.com

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ABSTRACT

Medical examinations are essential in legal cases, providing critical evidence that influences judicial outcomes. The COVID-19 pandemic impacted various societal aspects, including the nature and frequency of medical examinations. **Objective:** To compare the prevalence and types of medicolegal cases reported at District Headquarters Hospital, Rawalpindi, during the pre-pandemic and pandemic periods. **Methods:** A retrospective comparative cross-sectional study was conducted using data from March 2019 to August 2019 (pre-pandemic) and March 2020 to August 2020 (pandemic). Demographic details, including age and gender, as well as the types of cases (e.g., physical assault, sexual assault, trauma), were analyzed using SPSS version 24.0. **Results:** The total number of cases increased significantly from 389 in the pre-pandemic period to 441 during the pandemic ($P < 0.01$). During the pandemic, physical assault cases increased from 122 (31.36%) to 151 (34.24%), and sexual assault cases rose from 39 (10.02%) to 54 (12.24%) ($P = 0.013$). Blunt trauma cases increased from 79 (20.31%) to 101 (22.9%) and sharp trauma cases from 67 (17.22%) to 89 (20.18%). However, cases involving road traffic accidents (RTA) decreased significantly from 41 (10.54%) to 16 (3.63%) ($P = 0.04$). Poisoning incidents saw slight changes and the occurrence of burns, particularly chemical burns, increased from 3 (0.77%) to 5 (1.13). **Conclusions:** The COVID-19 pandemic lockdown has had a profound impact on the prevalence and nature of medicolegal cases. These findings emphasized the need for targeted interventions to address the specific medicolegal challenges exacerbated by pandemic conditions and to support vulnerable populations, particularly in urban areas and among women.

INTRODUCTION

Medical examinations play a crucial role in various legal cases, providing critical evidence that can influence the outcomes of judicial proceedings. When carrying out these evaluations, healthcare professionals use their medical expertise to look into crimes and determine the legal consequences of injuries and loss of lives. Forensic examination by the medical practitioner is vital to gather and examination of proof concerning injuries on one's body or sexually assaulted persons as well as alcohol/drug abuse cases alongside sanity investigation [1]. The COVID-19 pandemic has severely affected numerous parts of human

life such as law and health. The introduction of confinement and other control-related strategies for the disease's spread has led to social and economic disruption that was never witnessed before. This has affected the global occurrence and type of medicolegal cases [2]. The COVID-19 pandemic has led to increased stress, isolation, and job losses, making children and their mothers particularly vulnerable to the risk of domestic violence. Multiple studies have reported a significant rise in domestic violence cases during lockdown periods [3]. The COVID-19 pandemic led to a 10.2% increase in domestic

violence calls, driven by households without a prior history of violence [4]. This pandemic has increased domestic violence cases worldwide, but decreased child maltreatment and abuse reports due to home confinement. Studies have shown that the COVID-19 pandemic has led to a decrease in police reports and referrals to child and women protective services, mixed results in calls to police or domestic violence helplines, and an increase in women and child abuse-related injuries treated in hospitals [5]. In addition, firearm injuries also witnessed a sudden rise mostly targeting women and the elderly population. During the COVID-19 pandemic, the incidence of gunshot wounds to the head and neck increased by 10.4%, with alcohol abuse being the most common cause [6]. Lockdown measures decreased some types of crimes, such as street crimes and burglaries, due to increased police presence and reduced opportunities for criminal activities. Conversely, there was a notable increase in cybercrimes, including online fraud, phishing scams, and cyberbullying [7]. The pandemic led to significant job losses and financial insecurity, increasing stress and desperation among individuals. Areas with pre-existing poverty and inequality saw more pronounced increases in crime rates. The uncertainty and fear caused by the pandemic increased stress and anxiety levels across populations [8]. Social isolation due to lockdowns and restrictions exacerbated feelings of loneliness and depression, contributing to violent behavior in some individuals. The global prevalence of mental health issues during the COVID-19 pandemic was 28.0% for depression, 26.9% for anxiety, 24.1% for post-traumatic stress symptoms, 36.5% for stress, 50.0% for psychological distress, and 27.6% for sleep problems [9]. The pandemic also saw a rise in substance abuse as people coped with stress and isolation. Substance abuse is a significant risk factor for violent behavior, including gun violence. Study has shown that During the COVID-19 pandemic, 13.3% of respondents started or increased substance use to cope with stress [10]. Study of literature has highlighted certain gaps. While there are numerous studies examining the prevalence of medicolegal cases at a national or international level, there is a lack of detailed local studies. The literature often generalizes medicolegal cases without breaking down the types of cases (e.g., domestic violence, accidental injuries, suicides, homicides) [11]. A detailed analysis of how different types of cases have been affected by the lockdown is lacking. The pandemic strained healthcare systems, leading to delays in routine medical and forensic examinations [12]. There is insufficient research on how these delays impacted the quality and outcomes of medicolegal investigations. The research investigated whether the prevalence and nature of medicolegal cases at District Headquarters Hospital,

Rawalpindi, varied between the pre-pandemic and pandemic periods. The study focused on analyzing the frequency, characteristics, and types of medicolegal cases before and during the COVID-19 lockdown within a specific local context.

The COVID-19 pandemic and its associated lockdown measures profoundly disrupted societal functioning, generating unprecedented levels of stress, economic hardship, social isolation, and restricted mobility that collectively altered the nature and frequency of medicolegal cases in ways not previously documented in Pakistan's forensic medicine literature. While international studies have broadly reported increases in domestic violence, assault, and substance abuse during pandemic lockdowns, detailed local evidence examining the specific types, demographic patterns, and temporal trends of medicolegal cases in Pakistani healthcare settings remains scarce and underrepresented in the global literature. Furthermore, existing research often lacks granular case-type breakdown and fails to contextualize findings within the unique socio-economic and cultural dynamics of South Asian urban populations, creating a significant evidence gap for policy and forensic practice reform. It aimed to identify the primary types of medicolegal issues, compare their prevalence between the two periods, and examine any distinctive trends or patterns that emerged during the lockdown. This analysis sought to enhance understanding of the medicolegal landscape during public health emergencies. The null hypothesis posits no significant difference in the prevalence and types of medicolegal cases between the two periods. In contrast, the alternative hypothesis suggested a significant difference in both prevalence and types of medicolegal cases between the pre-pandemic and pandemic periods.

METHODS

This study was a retrospective comparative cross-sectional study aimed at analyzing the prevalence and characteristics of medicolegal cases across two distinct periods: the pre-pandemic period (March 2019 to August 2019) and the pandemic period (March 2020 to August 2020), after approval from the ethical review committee of DHQ Hospital Rawalpindi, letter No 799/DHQ Hospital Rawalpindi. Data were collected from different sources including hospital records and databases, medicolegal reports and documentation, emergency department logs, and police and forensic reports. A sample size of 150 was determined using G*Power, with an effect size of 0.41, a significance level (α) of 0.05, and a statistical power of 80% ($1-\beta$). The allocation ratio was set to 1, resulting in equal group sizes of 75 participants each for Group 1 and Group 2. These parameters were chosen to ensure the study is adequately powered to detect a medium effect size while

minimizing the risk of Type I and Type II errors. Sample size calculation is based on a 95% confidence level, 5% margin of error, and 50% population proportion, but justification for the proportion is missing. The study included all civil and criminal medicolegal cases reported during the specified timeframes: pre-pandemic period (March 2019–August 2019) and pandemic period (March 2020–August 2020). Only cases with complete records, including police reports, medical records, and forensic reports, were considered. Cases were excluded if they had incomplete records, an uncertain cause of death, originated outside the region, or fell under administrative exclusions. A structured data extraction form was developed to ensure uniformity in data collection. Cases with incomplete or missing records and cases in which the determination of the cause of death is kept under observation were excluded from this study. The date and time of the incident to analyze temporal patterns, location of the Incident including urban versus rural distribution, type of medicolegal case, circumstances of the incident (e.g., domestic violence, road traffic accident), medical findings, and forensic details were noted. Demographic data including the age and gender of the medicolegal examinee was noted. The number and type of medicolegal cases in the pre-pandemic and pandemic era was noted and the results were compared to assess any change in the prevalence of medicolegal cases after the pandemic sets in. A team of trained researchers and medical professionals were responsible for data extraction. Each team member was briefed to ensure consistency and accuracy in data collection. The confidentiality of the patient and victim was protected throughout the study. Data analysis was performed using SPSS (Statistical Package for the Social Sciences) version 24.0. Descriptive statistics were used to summarize demographic data, including means, standard deviations, and percentages. Inferential statistics, such as chi-square tests, were applied to compare the frequencies of different types of medicolegal cases between the pre-pandemic and pandemic periods. A P-value of ≤ 0.05 was considered statistically significant. These findings underscore the pandemic's impact on the nature and frequency of various medicolegal cases, with notable increases in assault, specific trauma categories, and changes in demographic patterns.

RESULTS

The study analyzed the prevalence and characteristics of medicolegal cases during the pre-pandemic and pandemic periods. The total number of cases increased significantly from 389 in the pre-pandemic period to 441 during the pandemic ($P < 0.01$). The average age of individuals involved in these cases showed a slight, non-significant decrease

from 29.6 ± 12.9 years to 28.6 ± 11.5 years ($P = 0.065$). Gender distribution revealed a significant shift, with the proportion of male cases decreasing from 67.35% to 60.01% ($P = 0.04$) and female cases increasing from 32.65% to 39.99% ($P = 0.03$). Additionally, there was a notable change in the location of incidents, with rural cases decreasing from 58.34% to 53.97% ($P < 0.01$) and urban cases increasing from 43.18% to 46.03% ($P < 0.01$). These findings highlight the impact of the pandemic on the distribution and demographics of medicolegal cases (Table 1).

Table 1: Number and Distribution of Medicolegal Cases

Variables	Pre-Pandemic Period Mean \pm SD/ Frequency (%)	Pandemic Period Mean \pm SD/ Frequency (%)	p-value
Number of Cases	389	441	<0.010
Age	29.6 \pm 12.9	28.6 \pm 11.5	0.065
Gender			
Male	262 (67.35%)	265 (60.01%)	0.040
Female	127 (32.65%)	176 (39.99%)	0.030
Location			
Rural	227 (58.34%)	238 (53.97%)	<0.010
Urban	168 (43.18%)	203 (46.03%)	<0.010

Figure 1 depicted the distribution and comparison of medicolegal cases reported during the pre-pandemic period (March 2019–August 2019) and the pandemic period (March 2020–August 2020), categorizing the data by frequency and types of cases to highlight significant changes or trends between the two periods.

Medicolegal Cases in Pandemic and Pre-Pandemic Period

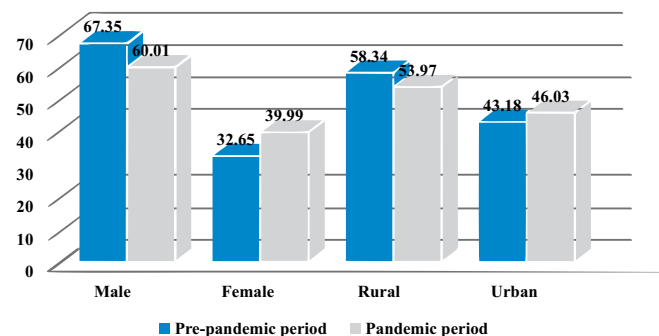


Figure 1: Medicolegal Cases in Pandemic and Pre-Pandemic Period

The study examined various types of medicolegal cases before and during the pandemic periods, revealing significant changes in their prevalence. During the pandemic, physical assault cases increased from 122 (31.36%) to 151 (34.24%), and sexual assault cases rose from 39 (10.02%) to 54 (12.24%), with both showing significant differences ($P = 0.013$). The trauma category also saw notable shifts, with blunt trauma cases increasing from 79 (20.31%) to 101 (22.9%) and sharp trauma cases from 67 (17.22%) to 89 (20.18%). However, cases involving Road Traffic Accidents (RTA) decreased significantly from 41

(10.54%) to 16 (3.63%) ($P = 0.04$). Poisoning incidents saw slight changes, with corrosive poisonings decreasing from 12 (3.01%) to 7 (1.58%), and other poisonings, such as the intake of rat poison and wheat pills, slightly increasing from 13 (3.34%) to 15 (3.4%) ($P = 0.04$). The occurrence of burns, particularly chemical burns, increased from 3 (0.77%) to 5 (1.13%), while electrical burns decreased from 6 (1.54%) to 4 (0.91%) ($P = 0.03$). These findings underscore the pandemic's influence on the nature and frequency of various medicolegal cases, highlighting shifts in assault, trauma, poisoning, and burn incidents (Table 2).

Table 2: Types of Medicolegal Cases in Pandemic and Pre-Pandemic Period (n=830)

Variables	Pre-Pandemic Period Frequency (%)	Pandemic Period Mean \pm SD/ Frequency (%)	p-value
Assault	122 (31.36%)	151 (34.24%)	0.013
Physical	39 (10.02%)	54 (12.24%)	
Sexual	83 (21.34%)	97 (21.99%)	
Trauma	224 (57.58%)	247 (56.01%)	0.040
Blunt	79 (20.31%)	101 (22.9%)	
Sharp	67 (17.22%)	89 (20.18%)	
Firearm	37 (9.51%)	41 (9.29%)	
RTA	41 (10.54%)	16 (3.63%)	0.040
Poisoning	33 (8.48%)	31 (7.03%)	
Corrosive	12 (3.01%)	7 (1.58%)	
Alcohol	8 (2.01%)	9 (2.04%)	0.030
Intake of rat poison, wheat pills	13 (3.34%)	15 (3.4%)	
Burns	10 (2.57%)	12 (2.72%)	
Chemical	3 (0.77%)	5 (1.13%)	0.030
Electrical	6 (1.54%)	4 (0.91%)	
Dry	1 (0.26%)	3 (0.68%)	

Figure 2 compared the frequency and types of medicolegal cases reported during the pre-pandemic period (March 2019–August 2019) and the pandemic period (March 2020–August 2020). The figure highlighted variations and trends, providing a visual analysis of how the pandemic influenced the nature and prevalence of these cases.

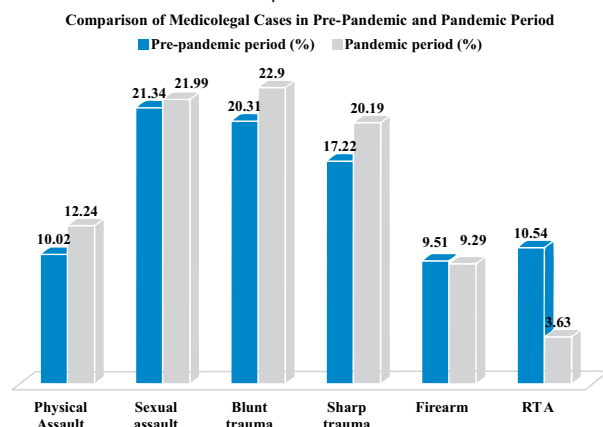


Figure 2: Comparison of Medicolegal Cases in the Pre-pandemic and Pandemic Period

DISCUSSION

The study's analysis of medicolegal cases during the COVID-19 pandemic lockdown compared to the pre-pandemic period reveals significant changes in the frequency and nature of these cases. The overall number of cases increased from 389 to 441, indicating a heightened incidence of medicolegal issues during the lockdown. There was a notable increase in physical assault cases, rising from 122 (31.36%) pre-pandemic to 151 (34.24%) during the pandemic, and in sexual assault cases, which increased from 39 (10.02%) to 54 (12.24%) ($P = 0.013$). This rise could be attributed to increased stress, economic hardship, and social isolation during the lockdown, which may have exacerbated interpersonal conflicts and domestic violence [13]. These findings correlated with the findings of Shahid E *et al.*, which reported 34.3% increase in cases of assault with ocular injury during COVID-19 lockdown, with most of the injuries being superficial with majority of the cases attributed to intimate partner violence, posing challenges to health care providers in managing sexual assault patients [14]. The COVID-19 lockdown increased the vulnerabilities of women to sexual victimization, creating opportunities for motivated offenders and promoting sexual violence. Moreover, policies such as social distancing, self-isolation, and lockdown policies added fuel to fire [15]. The overall trauma cases showed a slight decrease in blunt trauma cases from 79 (20.31%) to 101 (22.9%) and in sharp trauma cases from 67 (17.22%) to 89 (20.18%). However, there was a significant reduction in road traffic accident (RTA) cases, from 41 (10.54%) to 16 (3.63%) ($P = 0.04$). This decrease is likely due to reduced vehicular movement and travel restrictions during the lockdown period, leading to fewer traffic-related incidents. These findings correlate with the study of Chodos M *et al.*, that reported 22.6% cases of penetrating injuries during pandemic as compared to 15.1% in pre-pandemic period. Similarly, the firearm injuries during pandemic increased to 11.8% from 6.8% in pre-pandemic period [16]. The decrease in corrosive poisoning might be linked to reduced access to such substances during the lockdown, while the slight increase in other poisonings could reflect increased mental health issues and suicide attempts during the pandemic. Study conducted by Farooq S *et al.*, has also shown relevant findings with increase in suicidal ideation during pandemic to 12.1% [17]. Moreover, studies have shown that increased event rates for suicide ideation (10.81%), suicide attempts (4.68%), and self-harm (9.63%) during the COVID-19 pandemic when considered against event rates from pre-pandemic studies [18]. This study has provided data to inform policies related to public health emergencies, such as pandemic lockdowns, by highlighting trends and types of medicolegal cases that

emerged during such periods in local context. It has stimulated further research into specific aspects identified in the study and the effectiveness of interventions during lockdowns. This study also has certain limitations. The study's scope may be limited to a specific period during the pandemic lockdown, which might not capture changes or trends outside of this timeframe [19]. The retrospective design relies on the accuracy and completeness of hospital records, which may introduce bias due to missing or incomplete data. As a single-center study, the findings are specific to District Headquarters Hospital, Rawalpindi, and may not be generalizable to other regions or healthcare settings. Furthermore, external factors such as changes in law enforcement policies, socio-economic conditions, and public awareness during the pandemic were not accounted for and may have influenced case patterns. While the study analyzed demographic and case-type data, it lacked an exploration of psychological and social factors, such as mental health impacts and domestic dynamics, which may have contributed to observed changes. Additionally, the absence of post-pandemic data limits understanding of the pandemic's long-term effects on medicolegal trends [20, 21].

This study was constrained by its retrospective single-center design, reliance on the completeness and accuracy of existing hospital and forensic records, and restriction to a specific six-month pandemic window, all of which limit the temporal breadth and geographic generalizability of findings beyond DHQ Hospital Rawalpindi. The absence of post-pandemic data, lack of qualitative exploration of underlying psychosocial and socioeconomic determinants, and failure to account for confounding factors such as changes in law enforcement practices or public reporting behavior further restrict the depth of causal interpretation. Future research should adopt multicenter, prospective designs spanning both the pandemic and post-pandemic recovery periods across diverse urban and rural settings in Pakistan to capture a more complete and representative medico-legal landscape. Incorporating qualitative methods to explore the psychological, domestic, and economic drivers of case pattern shifts, alongside longitudinal analysis of vulnerable populations particularly women and children, would substantially enhance the evidence base needed to develop targeted forensic medicine protocols and policy responses for future public health emergencies.

CONCLUSIONS

The Covid-19 pandemic lockdown has had a profound impact on the prevalence and nature of medicolegal cases. The increase in assault and certain types of trauma cases underscores the social and psychological stresses induced

by the lockdown. Reduced mobility has led to a decrease in road traffic accidents. This information makes it even more necessary to come up with certain measures that can be used to deal with the particular medicolegal problems worsened by the same factors, while at the same time aiding those members of society who need help most especially in towns where they live or women. Future research should address these limitations by including multi-center data, extending the timeframe of analysis, and incorporating qualitative assessments to explore underlying socio-economic and psychological factors. These enhancements would provide a more comprehensive understanding of the pandemic's impact on medicolegal cases.

Authors' Contribution

Conceptualization: TM, SGS

Methodology: TM, SA, SGS

Formal analysis: FA

Writing and Drafting: RR, RM, TM, SA, SGS

Review and Editing: RR, RM, TM, SA, SGS

All authors approved the final manuscript and take responsibility for the integrity of the work

Conflicts of Interest

All the authors declare no conflict of interest.

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