

ORIGINAL ARTICLE

Impact of Lockdown on Unnatural Deaths at a Tertiary Care Hospital, Kolkata

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Abstract:

Unnatural deaths to a large extent are a curse to modern society. This research investigates trends of unnatural deaths reported to NRS Medical College Kolkata from November 2019 to January 2021. It was a retrospective descriptive study on 4403 postmortems carried out during the study period. The study period was categorized into pre-lockdown (November 2019-March 2020), lockdown (April 2020-August 2020) and post-lockdown (September 2020-January 2021) phases with each phase for 5 months. Our findings have been presented with respect to age, gender, cause and manner of death. Out of 4403 autopsies, 2389 were unnatural deaths and the rest were due to natural causes. Besides, among 2389 unnatural deaths 874 were reported in the pre-lockdown phase, 484 in lockdown and 1031 in post-lockdown phases respectively. Railway incidents were most common in pre-lockdown (33.06%) and post-lockdown (27.8%) whereas hanging was the most common type of unnatural death in the lockdown phase (20.04%). Unnatural deaths that solely occur outdoors decreased during the lockdown while all other types increased during the lockdown phase. Hence, this study is determining the trends of all types of unnatural deaths reported at NRSMCH Kolkata during the study period and the improvement in public health can lower the unnatural death to a large extent.

Keywords: Unnatural deaths; Hanging; Poisoning; Accidents; Lockdown.

Introduction:

According to section 174 of the criminal procedures code (CrPC) any death such as suicide, homicide, accident, poisoning, or drug overdose is considered to be unnatural death.¹ It is also defined in a way where a lesion is found during autopsy which is incompatible with life.² Unnatural deaths can increase because of easy access to fatal substances like poisons including medicinal drugs and also due to operating machines.³

In December 2019, an outbreak of a new viral Coronavirus disease (COVID-19) belonging to the coronavirus family was reported in Wuhan (China).⁴ MERS is a viral disease caused by Middle East respiratory syndrome coronavirus (MERS-CoV) that was first identified in Saudi Arabia in 2012.⁵ COVID-19 created devastation across the globe as it was spreading rapidly and had no specific treatment and many nations across the world implemented lockdowns to restrict movement and social interaction in an effort to control the spread of the viral disease. However, the lockdowns can have a significant impact on socioeconomic life and some of the ways in which lockdowns can affect socioeconomic life include: (1) Economic disruption (2) Mental health (3) Education (4) Access to healthcare (5) Domestic violence. The first case of COVID-19 infection reported in India was on January 27, 2020 when a 20 year old female presented to the Emergency Department in General Hospital, Thrissur, Kerala, with a one-day history of dry cough

and sore throat. There was no history of fever, rhinitis or shortness of breath. She gave history that she had returned to Kerala from Wuhan city, China, on January 23, 2020.⁶ In this study, the effects of lockdown on trends of unnatural deaths reported to NRS Medical College Kolkata during the year 2020 were investigated. The data is in reference to age, sex, nationwide lockdown with the type of unnatural deaths (accidental, homicidal, suicidal and others like alcohol and drug intoxication, electric injury, and many more) Moreover, it was found that overall there was a decrease in unnatural deaths, particularly those occurring outdoors. However, the number of unnatural indoor deaths, such as hanging, homicides, and burns, remained unchanged or increased. Vikas Arya et al. have reported that suicide rates increased in India in 2020,⁷ that was probably because of mental issues. Devassy S, et al. states⁸ lockdowns can take a toll on mental health, leading to increased rates of anxiety, depression and other mental health disorders however results of our study were different from that. During the lockdown, there was a decrease in all types of unnatural deaths which we studied and a significant decrease was seen in deaths caused by road traffic accidents, where a reduction of deaths in men was more than reduction of deaths women per month.⁹ The aim of this retrospective study on the impact of lockdowns on unnatural deaths among could be useful for several reasons with some of the potential benefits such as: (1) Understanding the indirect impacts of lockdowns: While lockdowns are implemented to control the spread of a disease, they can impact other aspects of society, including the risk of unnatural deaths. (2) Improving public health responses: By examining the relationship between lockdowns and unnatural deaths, policymakers can develop strategies to reduce the risk of such deaths. Overall, a retrospective study on the impact of lockdowns on unnatural deaths could provide valuable insights that can inform decision-

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making and improve future responses to public health crises.

Materials and methods:

This study is a retrospective study of unnatural deaths in the Department of Forensic Medicine and Toxicology at NRSMCH in Kolkata, India. The study was done after approval from the institute ethical committee N.R.S Medical College with reference number-NRSMC/IEC/81/2023 dated 27.03.2023. The subjects of the present study consist of unnatural deaths among those brought to the mortuary of NRSMCH Kolkata during the study period (November 2019 to January 2021). The data was collected from autopsy reports, hospital Records, police inquests and medical certification of cause of death (MCCD). Deaths due to natural causes, such as Myocardial Infarction, non-traumatic intracranial hemorrhage, Sepsis, and COVID-19 were excluded from the study. The study period was divided into three phases based on the implementation of lockdowns in response to the COVID-19 pandemic: pre-lockdown (November 2019 to March 2020), lockdown phase (April 2020 to August 2020) and post-lockdown phase (September 2020 to January 2021) with each phase for a period of 5 months.

Results:

Fig. 1 (a): Comparison of the total number of postmortems in 2020, 2019, and 2021. A total of 2389 unnatural deaths were reported during the study period, out of which 1031, 484 and 874 cases were in pre-lockdown, lockdown and post-lockdown phases respectively.

Fig. 1 (b): Trends of unnatural deaths during study period in different months, showing an abrupt fall in unnatural deaths at beginning of lockdown (April), a hike in lockdown and sharp increase in the post-lockdown (Aug).

Fig. 2 (a): Showing the incidences of cases of different unnatural deaths in different phases of the study period.

Fig. 2 (b): Showing fall in number of RTAs during lockdown period and increase in post-lockdown period. The difference in the incidence of RTA in pre-lockdown, post-lockdown and lockdown phases was found to be statistically significant at $p \leq .05$. (chi-square = 78.1516 and p-value is < 0.00001). As the Road traffic was also not allowed to move thus lead to fall in RTAs

Fig. 2 (c): Representing the trends of burn cases during 2020 with respect to lockdown. The incidence of burn cases decreased during the lock-down period but it was statistically not significant. (chi-square 3.0364. p-value 0.21911). As death due to burns is usually an indoor type of unnatural death at most of the times so the trend was not statically significant as the source of burn were available at homes also and access to burning objects remained unchanged.

Fig. 2 (d): Representing the incidence of hanging during pre-lockdown, lockdown and post-lockdown phase. During the lockdown phase the incidence of hanging was increased. The incidence of hanging among males showed a gradual increase from the pre-lockdown period to the post-lockdown stage. However, the overall increase in the cases was not statistically significant. (chi-square statistic 2.0995, p-value .350030). The

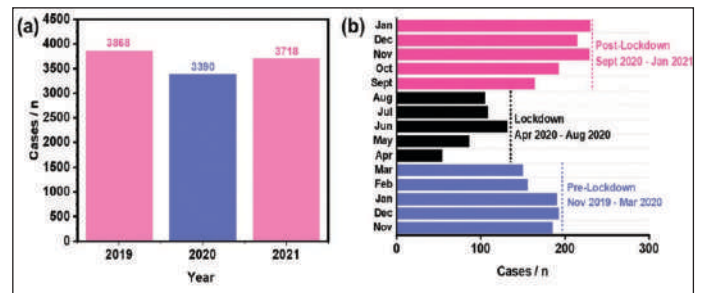


Figure 1.

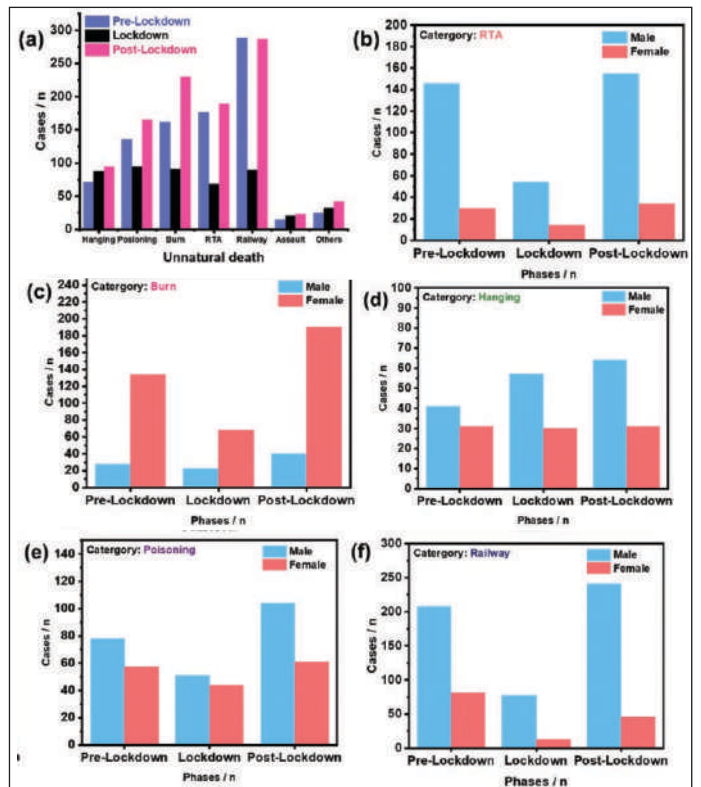


Figure 2.

trend remained almost same in every phase however a mild spike was observed in post-lockdown phase hence the results were not statically significant. As a lot of people came out from lock-down and found that they have lost their jobs, economical crisis that lead to emotional outbursts and trigger of anxiety.

Fig. 2 (e): Showing the trends of poisoning in different phases of study period. The maximum incidence of poison cases was observed in Post-lockdown phase and the incidence of poisoning cases decreased during the lockdown phase compared to the pre and post-lockdown phases but the difference was statistically not significant. (chi-square statistic 2.3008. p-value 0.316506). Although results were not statically significant but a noticeable decrease in number of poisoning cases was seen during lockdown phase most probably because people were restricted to their homes and shops were also closed so people had less access to the poisons and that led to fall in number of poisoning fatalities.

Fig. 2 (f) Representing the trends of railway accidents in different phases of lockdown and the railway accidents with respect to

Table 1: Distribution of unnatural death cases with respect to gender in phases of lockdown (pre- lockdown, lockdown, post-lockdown).

Pre-lockdown	M	F	T	Lockdown	M	F	T	Post-lockdown	M	F	T
Hanging	41	31	72	Hanging	57	30	87	Hanging	64	31	95
Poisoning	78	57	135	Poisoning	51	44	95	Poisoning	104	61	165
Burn	28	134	162	Burn	23	68	91	Burn	40	190	230
RTA	146	30	176	RTA	54	14	68	RTA	155	34	189
Rail	208	81	289	Rail	78	13	90	Rail	241	46	287
Assault	13	2	15	Assault	15	6	21	Assault	19	4	23
others	21	4	25	others	26	5	32	others	38	4	32
Total	535	339	874	others	304	180	484	others	661	370	1031

M: Male; F: Female; T: Total

gender in different phases of lockdown. It can be clearly seen in the figure how there was a decrease in number of railway fatalities during lockdown period. The decrease in the Railway incidents during the lockdown phase compared to the other two phases was statistically found to be significant at $p \leq .05$. (chi-square 3.9252. p-value.047568). Because offices, schools and other works places were closed moreover restrictions were there on movement of people so the load on railways was less that also impacted the incidence of railway accidents.

Discussion:

The total number of postmortems studied during the year of 2020 at NRS Medical College Mortuary were 3390 which was less than that in 2019 (3860 cases) and 2021 (3718 cases), hence there was a decrease in count of unnatural reported to NRSMC mortuary in year 2020 as shown in Fig. 1 (a). In 2020, the number of autopsies decreased, with the steep decline at the onset of lockdown and there was an increase in number of cases towards the end of lockdown as shown in Fig. 1 (b). Moreover, our study found the number of deaths due to poisoning (95 cases) was the commonest cause of death during the lockdown phase followed by burns (91 cases) and railway incidents (90 cases), as shown in Table 1. Among the different types of unnatural deaths considered in the present study only hanging and homicidal deaths showed an increasing trend throughout the study period while in all other types the cases decreased during the lockdown period. Males comprised majority of the victims in all the types of deaths in our study except burns where females comprised 81.1% of the cases and the findings are similar to an article of World Health Organization (WHO) mentions that the women are more likely to die from burns than men, even though men generally have higher rates of injury.¹⁰ This may be because women are more likely to be injured by open fires used for cooking or heating, which can cause clothing to catch fire. Besides, self-harm and violence are also risk factors for women, hence the trend was not impacted by lockdown. Moreover, the incidence of burns also showed variations during the lockdown and non-lockdown phases, as it was observed that there was a decrease in the number of cases of burns during the lockdown phase compared to the other two phases and females outnumbered the males throughout the period of study. In addition, the mean age of female victims was 39 years. In the study area the female is more prone to get injured with burn because women are exposed to flames in different circumstance like religious rituals, cooking on direct flame, wearing saree, etc. It is important to understand the underlying causes of these changes in order to develop appropriate

interventions and preventative measures. Some potential factors that could influence the incidence of burns could include changes in daily routines, changes in access to cooking and heating sources, make the availability of safety measures, and initiation of safety awareness programs. It would be helpful to gather more data and information about the specific circumstances surrounding the burns in order to better understand the trends and identify potential solutions, Kruchevsky et al. reported a decreased incidence of burn during the phase of lockdown¹¹ which is consistent to our findings.

Rathore S, et al. have found in their study that there was a significant fall in incidence of RTAs.¹² In the present study we found statically that there was a significant decrease in the number of road traffic accidents (RTAs) during the lockdown period as shown in Fig. 2 (b) with a decrease of 77.9% was observed. During the pre-lockdown phase, there were 176 (39.7%) deaths from RTAs followed by 68 (15.7%) and 189 (43.6%) in the lockdown and post-lockdown phases respectively. Besides, majority of the victims of RTA were males with the mean age of 42 years. While it may not be possible to completely eliminate RTAs, their frequency can be reduced through strict enforcement of traffic rules and improvements of road infrastructure.¹³

Furthermore, there was no statistically significant changes in trends of deaths due to hanging as shown in Fig. 2 (d). Out of a total of 254 deaths reported due to hanging, 72 were reported during the pre-lockdown phase, 87 during lockdown, and 95 during the post-lockdown phase, the incidence of hanging in post lockdown increased because of job losses and hopelessness. According to the research conducted by Goceoglu UU and Balci Y, it was found that there were significant differences in socioeconomic and mental health factors between men and women in cases of hanging suicide. The number of males who committed suicide by hanging was higher than that of females.¹⁴ Das and co-workers have also found that, there has been a sharp increase in hanging cases in the lockdown period.¹⁵ In our study we also found that prevalence of males was more than females, but the trend of hanging was increasing during all phases. Aradhana Singh et al. reported in their study that the severe negative changes in behavior caused by the COVID-19 pandemic may have been worsened even further by full lockdowns, leading people to use the means of suicide that were easily accessible to them at home, such as hanging and common poisonings.¹⁶

The primary causes for this could be attributed to factors such as job loss, limited access to healthcare, social stigmatization, and a loss of hope leading people to severe depression. In contrast, the deaths due to poisoning, and railway accidents as shown in Fig.2 (e) and 2 (f) respectively, also decreased during the lockdown period in comparison to the other two phases. Although results were not statistically significant, but noticeable spikes were found in the deaths due to such incidents especially in case of poisoning in post-lockdown period, Behera A et al. stated that young males in the age group of 20-30 years, who are less educated and have lost their jobs due to the COVID-19 pandemic lockdown, may be at a higher risk for negative outcomes such as financial instability and mental health issues.¹⁷

Conclusion:

There was a decrease in the number of purely outdoor unnatural deaths, but other forms of unnatural deaths either remained constant or increased, particularly hanging which remained in increasing trend. In post-lockdown phase all types of unnatural deaths increased which was probably because of financial crises because of job losses, hopelessness, intolerance that developed because of isolation and social-stigmas of COVID-19. As the incidents of unnatural deaths are increasing every day and we found that the percentages of unnatural deaths decreased because of lockdown especially RTAs and railway fatalities so it is quite clear that the incidents of these unnatural deaths can be decreased. We have some recommendations to address the concern of the current era, that is the increasing trend of unnatural deaths: (1) Educate people about the importance of mental health, (2) Reassure the person (3) Reduce stigma towards mental health problems, (4) Arrange motivational programs, (5) Awareness programs about public safety measures.

Conflict of interest: None declared.

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