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Suicide hangings during pre-Covid-19 and Covid-19 – Myths debunked for the lower-middle-income group countries

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ARTICLE INFO

Keywords:
Covid-19 pandemic
Suicide
Hanging
Autopsy
Psychiatry
Medico-legal issues

ABSTRACT

The psyche about the adverse effects of the Covid-19 pandemic has got fixed to a level of conviction that committing suicide is directly linked to coronavirus infection. The statistics of suicidal hangings for the pre-Covid-19 and the Covid-19 periods were compared in the Indian capital. The data analysis of the autopsy records showed the absence of temporal association between the incidence rates of suicides between these two periods. The study concludes that there was no net increase in suicide rates in the study population of this lower-middle-income group country during the Covid-19 pandemic.

1. Introduction

The Covid-19 pandemic is not vigorous now. However, at its surge led to anxiety, fear of contagion, and depression among major sub-populations of the world (Oonell et al., 2020). The consequences of the Covid-19 infection led to a behavior that was believed to culminate as completed suicide in predisposed individuals (Sher, 2020). Hanging is the commonest method employed to commit suicide (Biddle et al., 2010). The Covid-19 pandemic was seen as related to rising rates of suicide fatalities (Panigrahi et al., 2021). However, this was reported to be farce as well for the developed nations (Pirkis et al., 2021). This study was done to clarify the greatly mired issue of the incidence of suicides during the Covid-19 pandemic for developing nations.

2. Material and methods

The data was retrieved from the inquest and post-mortem records available at the department of Forensic Medicine of the study institute located in Delhi – the Indian capital. The cases of suicide hangings autopsied from April 2019 to September 2019 (pre-Covid-19) and April 2020 to September 2020 (Covid-19) were divided into two cohorts. The mortality statistics were calculated by Chi-square test (P < 0.05) using SPSS version 20.0. Ethical clearance was relaxed under the authorization for the conduction of the medico-legal post-mortem examination.

3. Results

The number of deaths due to suicidal hangings during the pre-Covid-19 and the 1st wave of the Covid-19 pandemic was 164/1197 (13.7 %) and 163/653 (24.9 %) respectively (denominator - total number of autopsies) (Fig. 1). The Chi-Square test revealed a highly significant P – the value of 0.0001. The monthly mean values of the cases were 27.3 (pre-Covid-19, margin of error ± 5.103) and 27.1 (Covid-19, margin of error ± 7.673) with a confidence interval of 95 %. The male-female gender-wise distribution was 3:1 for pre-Covid-19 and 2:1 for the Covid-19 pandemic (38 % versus 24 %, x2 - 4.12, P - value - 0.04). For the pre-Covid-19 and the Covid-19 periods, the maximum number of cases of suicide belonged to the age group of 18–40 years totaling 124 (75.6 %) and 121 (74.2 %) [x2 = 0.011, P - value 0.91] with a variation of the range as 20–37 (pre-Covid-19) and 16–41 (Covid-19). An increase in the cases of suicides was seen for the month of May, June, and July for the pre-Covid-19; and May, June, and August for the Covid-19 periods. The cumulative case frequency was the least for the month of September 2019 (pre-Covid-19) and April 2020 (Covid-19).

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https://doi.org/10.1016/j.ajp.2022.103349
Received 14 October 2022; Received in revised form 28 October 2022; Accepted 10 November 2022
Available online 24 November 2022
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4. Discussion

The data by National Crime Record Bureau revealed that suicidal hangings accounted for about half of all the deaths that occurred during the year 2017 (adsi_reports2021). The verbal autopsy studies from the rural settings in India showed a nearly twice suicide rate of 82–95 per 100,000 of the population (Rane, 2014). The WHO estimates showed that 77 % of the suicides in low and middle-income countries accounted for 1.3 % of all the deaths worldwide as the 17th leading cause for the year 2019 (Suicide data – WHO, 2021). The psychiatrists intuited about the possibility of increased rate of suicides due to the precipitation of the negativity casted by the Covid-19 pandemic upon the individuals living under conditions of occult or manifest stress (Tandon and Nathani, 2018). This led to planning by health agencies worldwide to deal with anticipated exaggerations like ‘dual pandemic of suicide and Covid-19’ (Banerjee, 2021), ‘suicide mortality and Covid-19 - perfect storm’ (Reger, 2020), and ‘Covid-19 suicides – global pandemic’ (Thakur, 2020).

The endorsement of the media reports of the cases of completed suicide by scientific literature ostensibly flared up this concern as an attestation about impending doom of deaths to be seen worldwide due to the Covid-19 pandemic (Rajkumar, 2020). The results of observational studies also suggested an increase in the rates of suicide with a full-blown pandemic (Inoue, 2020). These situations saw equally extensive and parallel conduction of the planned research that sailed globally through an in-depth analysis of the representative study populations. These studies devoid of the limitations of purely theoretical studies showed an astonishing but substantive reductions in suicide rates in developed nations during the Covid-19 pandemic (Deisenhammer, 2021; Kahl, 2021; Kim, 2021; Leske, 2021; Mitchell, 2021; Nomura, 2021; Woolf et al., 2021). Increased mortality was caused by default due to a disproportionate effect owing to inclusion of the non-standardized study population carrying underlying psychiatric disorders, thus leading to a selection bias (Nemani, 2021).

The sheer lack of a high-quality, non-skewed, and representative data-based study regarding the temporal association between suicides and the Covid-19 pandemic for the population of a low-middle-income group of countries is abridged here. Hanging being the commonest method preferred to commit suicide was chosen to study the suicide rate during the Covid-19 pandemic. The maximum number of suicides seen (about 3/4th) in the age group of 18–40 years with no difference for the pre-Covid and the Covid-19 period vis-a-vis the finding of 78.8 % for the age group of 25–60 years in another study from the Indian sub-continent was noteworthy. However, a significant rise in the death rate in ages > 40 years with a reverse fall amongst those aged < 18 years was contrasting here (Panigrahi et al., 2021).

The incidence of 13.7 % (n = 164) of suicidal hangings during the pre-Covid-19 got almost doubled to 24.9 % (n = 163) during the 1st wave of the Covid-19 pandemic in this study. Though the absolute figures regarding the number of suicidal hangings were the same, the doubling of incidence rate was explained due to a decrease in the number of medico-legal autopsies conducted during the Covid-19 period (denominator) owing to a decrease in total number of unnatural deaths i.e.164/1197 (13.7 %) v/s 163/653 (24.9 %). This proved the absence of change in the incidence of suicide deaths during the Covid-19 pandemic in India, a finding that was corroborated by the results of another study conducted across 16 high incomes and 5 upper-middle-income groups of nations (Pirkis al, 2021).

It was construed that the generalized increase of suicides with the Covid-19 pandemic as reported in earlier studies could be wrong ab-initio in view of the differential impact on populations by the Covid-19 pandemic. This was proved by the insignificant rise in death rates during the Covid-19 pandemic for few sub-populations based on community (Mitchell, 2021) and gender-wise differences (Nomura, 2021). The increased rate of suicide amongst females during the Covid-19 period seen in this study was contradictory to a literature review reporting otherwise (M: F - 4:1) (Panigrahi al, 2021).

The authors included systematic reviews of suicide rates during international respiratory outbreaks including Covid-19. This was inspired by the limitation of the conduction of cohort studies to determine such an association and to make this study robust by providing the highest level of evidence. An increased risk of suicide was reported in the immediate aftermath of the Covid-19 pandemic in a few studies (Leaune, 2020; Wasserman, 2020; Wang, 2021). However, these results were contemplated to be due to deviant reporting e.g. 3 % rise in the monthly suicide rates across prefectures in Japan between the years 2019 and 2020 (Seposo, 2021). The air for this was cleared by evaluation of the mortality statistics (Aron, 2020).

The much important issue of ‘Covid-19 and Suicide’ that invited worldwide concern was not only critically appraised, but resolved reasonably great with the deliberation of key learning and guidance for action, as an academic compendium (Tandon, 2021). It highlighted the grave side-effects of deviant and pseudo-alarmist reporting on such a critical issue, with concomitantly reasserting the importance of attention that is required to be provided to the vulnerable population (priority vaccination against Covid-19 infection for people with psychiatric disorders Mazereel et al., 2021). This paper also highlighted the value of interpretation and the action plan for the sub-population (Mitchell, 2021) and gender-related differential affection (Nomura, 2021) by the Covid-19 infection. The increased requirement of adherence to the ethical guidelines (Gunnell al, 2020) for publishing on such a sensitive issue amid an already constrained availability of mental health services across developing nations proved to be a great guide to the researchers working on this area and was another scientific rigor of this paper (Tandon, 2021).

The authors followed Samaritan’s guidelines regarding the publication of the results of the Covid-19 deaths. They believe that the results of this study done at the capital of the Indian sub-continent will enlighten all the stakeholders from the low-middle-income group countries.

![Graph](image-url)

**Fig. 1.** Month wise distribution of suicidal deaths by hanging during pre-Covid-19 and the 1st wave of Covid-19.
5. Conclusion

The study results showed the absence of an increase in the incidence of suicides during the Covid-19 period even in low-income group nations, alike high-income ones.

Limitations of the study

The discussion of the variable autopsy rate between the study institute and the rest of the population outside the capital city was beyond the objectives of this study.

Financial disclosure

None.

Declaration of Competing Interest

None.

Acknowledgements

None.

Compliance with Ethical Standards

- Manuscript has not been submitted to other journal for simultaneous consideration.
- Manuscript has not been published previously (partly or in full).
- No data have been fabricated or manipulated (including images) to support conclusions
- No data, text or theories by others are presented as if they were our own (authors).
- Research work of other’s has been properly acknowledged.
- Consent to submit has been received from all co-authors.
- Authors whose names appear in submission have contributed sufficiently to scientific work and therefore share collective responsibility and accountability for the results.

Contribution statement

All authors have materially participated in the research and/or the preparation of this article, SKV conceptualized and designed the study. PM and SKV collated the data. AD, PM, SKV and CM participated in the data analysis, literature search and drafting of manuscript. CM contributed in the review & edits of the final draft of the manuscript. All the authors have approved the final article to be true and have included the same in the disclosure. All authors have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, (3) final approval of the version to be submitted.

Ethical statement

The ethical clearance was relaxed under the authorization by the Investigating Authority for the conduction of the medico-legal post-mortem examination in all the cases as per the land laws.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article from anywhere in any form.

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