Original Article

Near-Hanging in a Tertiary Care Hospital attached to a Medical College: A Ten-Year Retrospective Analysis of Demography, Prognostic Indicators, and Immediate Outcomes (2012–2021)

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Abstract

Background: Near-hanging is frequently reported in trauma and emergency, compelling immediate treatment and forensic intervention. Early predictors of outcome help guide clinical and medico-legal decisions. This study provides decade-long data highlighting prognostic significance in a developing country setting.

Aim: To study demographic attributes and prognostic implications of Glasgow Coma Scale (GCS) at admission in near-hanging cases over ten years.

Materials and Methods: A retrospective observational study of 71 consecutive near-hanging patients admitted alive between January 2012 and December 2021 was conducted. Variables included age, gender, admission GCS, and outcome (survived/expired).

Results: The mean age was 32.1 years. Young adults (21–30 years) constituted 36.6% of cases. Males accounted for 54.9%. Overall survival was 54.9% and mortality 45.1%. Patients with GCS ≤8 on admission had significantly higher mortality ($\chi^2 = 12.84$; $p < 0.01$). The study highlights admission GCS as a simple yet robust predictor of outcome in resource-limited settings.

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Conclusion: Near-hanging predominantly affects young adults. Admission GCS is a statistically significant predictor of mortality. Early neurological assessment and aggressive emergency care are crucial.

Keywords: Glasgow Coma Scale; Mortality; Near-hanging; Suicide attempt; Prognostic indicators.

Introduction

Hanging remains a method of choice for suicide globally and contributes significantly to preventable mortality.[1,2] On constriction of the neck following hanging, there is compression of the neck structure, resulting in unconsciousness, making it nearly impossible to prevent the death. Hence, literature reports a high mortality between 70% to 95% among hanging victims before reaching the hospital.[1,3,4] However, in a few instances (10-30%) where timely intervention and the institution of life-saving measures are undertaken, a few victims are brought alive to the medical care facility. This is referred to as 'Near hanging'.[5] Among these patients, 18% survival was reported in victims developing cardiac arrest complications, and 90% survival in patients without neurological compromise.[1,6,7] The Glasgow Coma Scale (GCS) is extensively recognised for evaluating neurological status in emergency settings as a predictor of outcome.[8,9] However, recent multicentric study emphasised the utility of additional prognostic indicators, including injury severity and duration of hypoxia.[10]

In India and other developing countries, there is limited longitudinal data spanning a decade, especially comparing evaluating admission neurological scores and the outcome in victims of hanging brought alive for medical intervention. This study fills this gap by analysing near-hanging cases over ten years.

Materials and Methods

This retrospective observational study was undertaken at a tertiary care teaching hospital between January 2012 and December 2021. Seventy-one patients reported alive after attempted hanging were included. Demographics (age, gender), admission Glasgow Coma Scale (GCS) scores, and hospital outcomes (survived or expired) were documented for analysis. Descriptive statistics were used to summarise the data, and the association between GCS category and mortality was analysed using the Chi-square test, with $p < 0.05$ considered statistically significant. Although no interventions were performed, Institutional Ethical Committee approval was obtained before the study.

Ethical clearance was obtained from the Institutional Ethics Committee (Ethical Approval No.: AJEC/REV/287/2021 dated 22.11.2021.

Results

Out of the 71 patients reported alive after a failed attempt of hanging, most of the victims belonged to the age group of 21–30 years (36.6%), followed by 31–40 years (25.4%) as illustrated in Table 1. Individuals aged less than 20 years accounted for 11.3% of cases, and 16.9% were in the age group between 41years and 50 years. The mean age of the patients was 32.1 ± 9.8 years, indicating that most cases occurred among younger individuals.

Table 1: Age Distribution (n=71)

Age Group (Years)	Number	Percentage (%)
≤20	8	11.3
21–30	26	36.6
31–40	18	25.4
41–50	12	16.9
>50	7	9.8
Total	71	100

Table 2 depicts the gender distribution of the study population. Of the 71 near-hanging patients, 39 were males (54.9%), while 32 were females (45.1%). The attempted hanging was slightly common among males in this cohort.

Table 2: Gender Distribution

Gender	Number	Percentage (%)
Male	39	54.9
Female	32	45.1
Total	71	100

The correlation between Glasgow Coma Scale (GCS) score at admission and hospital outcome is explained in Table 3. Amongst32 near-hanging patients with severe neurological impairment (GCS 3–8), 22 expired and10 survived, emphasising a

high mortality in this group. In comparison, among 21 patients with moderate GCS scores (9–12), 15 survived, and 6 expired. Among 18 patients with mild impairment (GCS 13–15), 14 survived, and only 4 died, indicating the best outcome. Statistical analysis using the Chi-square test showed a significant association between GCS at admission and fatality ($\chi^2 = 12.84$; $p < 0.01$), indicating that lower GCS scores at admission were significantly associated with higher mortality.

Table 3: GCS Category and Outcome

GCS Category	Survived	Expired	Total
3–8	10	22	32
9–12	15	6	21
13–15	14	4	18
Total	39	32	71

Discussion

Hanging remains a common method of suicide globally and contributes significantly to preventable mortality. Epidemiological data from across the globe indicate that hanging accounts for a substantial proportion of suicides in both developed and developing nations. This is attributed to the fact that any material can be used as a ligature easily and the perceived notion of certain lethality. Most of the research highlights that 70–95% of hanging victims succumb at the scene before institution of medical intervention, reflecting the rapid lethality associated with the compression of neck structure and ensuing cerebral hypoxia.[1,2,4] However, a marginal number of victims survive long enough to reach the hospital and are termed as near-hanging cases, representing approximately 10–30% of attempted hanging incidents.[5]

The survival of near-hanging victims largely depends on the extent and period of cerebral hypoxia resulting from vascular occlusion and airway obstruction. Impeding of the blood flow through the carotid arteries can rapidly lead to cerebral ischemia and loss of consciousness, while venous occlusion may result in cerebral congestion and raised intracranial pressure. In certain circumstances, although in miniscule in number, in instances of partial/incomplete suspension, early release of neck constriction, rapid initiation of resuscitative measures, or incomplete vascular occlusion, victims may be rescued well before irreversible brain injury occurs and thus reach the hospital alive.[3]Early intervention, including airway stabilisation, oxygenation, and intensive monitoring, plays a critical role in improving survival in such cases.

The present study demonstrates that near-hanging patients are predominantly young adults, the majority of them in the age group between 21 and 30 years (36.6%), followed by those in the age group of 31–40 years (25.4%). This observation is in concurrence with studies indicating that suicidal tendencies and attempted hanging are more common among young and economically productive age groups, often linked to psychosocial stressors and mental health disorders.[2]In the current cohort, an insignificant male predominance (54.9%) was observed, in sync with global suicide trends showing higher rates of completed suicide among males, although gender differences may vary across regions. A significant finding of this study is the association between GCS at admission and outcome. Patients presenting with GCS scores between 3 and 8 had highest mortality, whereas those with GCS scores of 13 to15 had the most favourable outcomes. The statistical analysis showed a significant relationship between lower GCS scores and increased mortality ($\chi^2 = 12.84$; $p < 0.01$). These findings are in concurrence with the previous studies that highlighted the prognostic value of early neurological assessment in near-hanging victims. Early and prompt identification of patients with severe neurological impairment can facilitate swift intensive care management and may aid clinicians in anticipating potential complications and outcomes.[6,7]

The present study adds to existing literature by providing a decade-long retrospective dataset from a tertiary care centre, emphasizing the practical utility of GCS as an early prognostic tool in near-hanging cases. This is particularly relevant in resource-constrained settings where rapid clinical decision-making is essential.

The present research provides longitudinal data spanning over a decade from a tertiary care setting, contributing crucial understandings into the demographic profile and prognostic indicators of near-hanging cases in a context of developing country. In many developing countries, long-term analyses of near-hanging cases are limited. The findings highlight the significance of rapid rescue,

early neurological evaluation, and aggressive emergency management in aiding positive outcomes among these patients. Furthermore, from a forensic and public health perspective, these findings may aid in planning preventive strategies and prompt emergency response systems.

Nonetheless, some limitations should be acknowledged, which may be overcome in future studies. Being a retrospective study, the study relied on hospital records, and some related variables, such as duration of suspension, ligature type, pre-hospital resuscitation, and psychiatric history, could not be evaluated. Future prospective research incorporating these variables may provide a more inclusive understanding of prognostic determinants in near-hanging victims.

Conclusion

Near-hanging poses a considerable clinical and medico-legal concern due to the near-total lethality attributed to hanging. Although significant victims die before reaching medical care, a small proportion survive to receive medical care. The present study shows that near-hanging predominantly affects young adults and shows a slight male predominance. Importantly, the Glasgow Coma Scale (GCS) score elicited on admission is a significant predictor of hospital outcome, with lower GCS scores being greatly associated with enhanced mortality. Early neurological evaluation and prompt emergency management are therefore vital in improving survival outcomes. Long-term analyses such as this provide vital epidemiological intuitions and emphasize the need for enhanced preventive strategies, timely rescue, and efficient emergency care systems to reduce mortality associated with hanging attempts.

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Conflict of Interest: The authors declare no conflict of interest.

References

1. Gunnell D, Bennewith O, Hawton K, Simkin S, Kapur N. The epidemiology and prevention of suicide by hanging: a systematic review. Int J Epidemiol. 2005;34(2):433-442.
2. Kanchan T, Menon A, Menezes RG. Methods of choice in completed suicides: gender differences and review of literature. J Forensic Sci 2009;54(4):938-942.
3. Karanth S, Nayyar V. What is the optimal management of the near-hanging patient? Injury. 2015;46(3):420-424.
4. Boots RJ, Joyce C, Mullany DV. Near-hanging: epidemiology, pathophysiology, and management. Anaesth Intensive Care. 2019;47(5):420-428.
5. Adams N. Near hanging. Emerg Med 1999;11:17e21.
6. Smith CM, Taylor DM, Cameron PA, et al. Outcomes in critically ill patients after near-hanging injury. Chest. 2020;158(6):2404–2413.
7. Salvetti M, et al. Epidemiology and outcome predictors in patients with hanging-induced cardiac arrest. Front Neurol. 2023;14:1240383.
8. Bhandari R, Mahato IP, Poudel M, et al. Prognostic factors in near-hanging cases: a hospital-based study. JNMA J Nepal Med Assoc. 2018;56(210):547–551.
9. Teasdale G, Maas A, Lecky F, et al. The Glasgow Coma Scale at 40 years: standing the test of time. *Lancet Neurology*. 2014;13(8):844–854.
10. de Charentenay L, Schnell G, Pichon N, et al; Antigone Investigators. Outcomes in 886 critically ill patients after near-hanging injury. Chest. 2020;158(6):2404–2413.