Profile and Outcome of Near-hanging Patients Presenting to Emergency Department in a Tertiary Care Hospital in South India – A Retrospective Descriptive Study

Priya Ganesan, Moses Kirubairaj Amos Jegaraj, Sathish Kumar, Bijesh Yadav, Bagyalaksmi Selva, Reginald George Alex Tharmaraj

ABSTRACT

Background: Hanging is one of the common modes of deliberate self-harm presenting to emergency departments (EDs) across the world. Early intervention and aggressive resuscitation can decrease the morbidity and mortality associated with near-hanging. Our aim was to study the profile of patients presenting with near-hanging and their outcome to our adult ED. Materials and Methods: Medical records of patients with age more than 15 years presenting with near-hanging to the ED was reviewed retrospectively. The following profile data such as age, gender, marital status, material used for hanging, and type of hanging were collected. The information regarding the outcome of the patients from the hospital also analyzed. The data were analyzed to express the mean (± standard deviation) for the quantitative variables and frequency for the qualitative variables (± percent) using SPSS statistical software. Results: The analysis of 2 years data from August 2014 to July 2016 revealed 77 patients reached the ED with near-Hanging. The mean age of the patients was 31.1 years. Approximately, 43% were complete hanging, while rest were partial hanging. Majority of the patients used dressing materials for hanging themselves. Out of 77 patients, 64 were discharged alive while 2 patients died in the hospital and 11 were left against medical advice. Conclusions: Hanging is still a major mode of deliberate self-harm in South India both among men and women. The outcome of near-hanging is positively influenced by early admission and active treatment.

Key words: Emergency department, near-hanging, suicidal hanging attempt

INTRODUCTION

Suicide is a major public health problem more so in the low- and middle-income countries. Every year, around a million people die of suicide. India accounts for one the highest rates of suicide in the world. In

How to cite this article: Ganesan P, Jegaraj MK, Kumar S, Yadav B, Selva B, Tharmaraj RG. Profile and outcome of near-hanging patients presenting to emergency department in a tertiary care hospital in South India – A retrospective descriptive study. Indian J Psychiat Med 2018;40:205-9.
India, the common modes of suicide were ingestion of agricultural chemicals, hanging, self-immolation, and drowning. The major cause of morbidity and mortality in hanging is due to hypoxic brain injury. Mortality is decreased by hospital treatment in patients with near-hanging despite having low initial Glasgow coma score. The outcome is improved by early medical intervention and aggressive resuscitation. This study aims to study the profile of patients with near-hanging and their outcome to our adult emergency department (ED) of a tertiary care hospital in South India.

**MATERIALS AND METHODS**

This is a retrospective study, of patients presenting with near-hanging to the adult ED of a Medical College Hospital, which is a 45-bed department in South India with an average of 200 admissions daily. All patients more than 15-year-old presenting with near-hanging from August 2014 to August 2016 were included in the study. The patients were identified using the triage register of the ED. A retrospective chart review was performed on all the above-said patients using the hospital’s electronic medical database. The following was extracted demographics, age, sex, date of admission, type of material used, complications such as low GCS, discharge status, and duration of admission.

Statistical analysis was performed using (SPSS for Windows, Version 16.0. Chicago, SPSS Inc). Mean (standard deviation) were calculated for the continuous variables. The categorical variables were expressed in proportion and Chi-square test or Fisher’s exact test was used to compare dichotomous variables. For all tests, a two-sided $P = 0.05$ or less was considered statistically significant.

This study was approved by the Institutional Review Board and patient confidentiality was maintained using unique identifiers and by password protected data entry software with restricted users.

**RESULTS**

The study was done from August 2014 to August 2016. There were a total of 135,480 ED visits of which 77 were near-hanging patients. Out of 77 patients presented with near-hanging, 44 (57.1%) were males and 33 (42.9%) were females. Mean age was 31.1 years ± 0.70% of patients belong to the age group between 21 and 59 years [Table 1].

Majority of patients (84.4%) had attempted hanging for the first time and 15.6% patients attempted for the second time. Preexisting psychiatric illness was reported by 10 (13%) of patients. Alcohol abuse was found among 17 (22.1%) of patients. Around one-third (31.6%) of patients had received some form of prehospital care [Table 1].

Forty-three percent of patients suspended their entire body with the noose (complete hanging) while 44 (57.1%) patients reported partial hanging in which some part of the body was in contact with the ground [Table 2]. The common materials that were used for hanging were dressing materials such as dupatta (29.9%) and saree (28.6%). Other materials used were nylon rope (22.1%), and in 16.9% of patients, the material used was not mentioned [Table 2].

About 76.6% of the patient’s files did not have the clear record of the reason for hanging. Among those who provided reasons, marital dispute (14.3%) was the most common, followed by failed love affairs (6.5%). Loss of employment and financial loss were also reported by one patient in each category [Table 2].

Patients had three major complications such as seizures, [Table 2: Mode, material used and reason for hanging]

| Mode of hanging | Number of patients (%) |
|-----------------|------------------------|
| Complete        | 33 (42.9)              |
| Partial         | 44 (57.1)              |

| Materials used for hanging | Number of patients (%) |
|----------------------------|------------------------|
| Dupatta                    | 23 (29.9)              |
| Saree                      | 22 (28.6)              |
| Rope                       | 17 (22.1)              |
| Curtain                    | 2 (2.6)                |
| Not known                  | 13 (16.9)              |

| Reason for hanging | Number of patients (%) |
|--------------------|------------------------|
| Marital disputes   | 11 (14.3)              |
| Failed love affairs| 5 (6.5)                |
| Loss of employment | 1 (1.3)                |
| Financial loss     | 1 (1.3)                |
| Reasons not elicited| 59 (76.6)              |
pulmonary edema, and low Glasgow coma scale at the time of presentation. Out of the 77 patients, 9 presented with seizures and 23 had pulmonary edema [Figure 1]. Forty-two patients presented with a Glasgow coma score (GCS) of <9 and 20 patients had a GCS between 9 and 13 while 15 patients presented with a GCS of 14 and 15 [Figure 2].

Almost 75% of the patients required mechanical ventilation and Intensive Care Unit care. However, 40% of the patients got discharged within 2 days of admission. Only 18% of the patients required to stay in the hospital for more than 7 days. In our study population, 83% of our patients got discharged from the hospital. Only 2 patients died in the hospital. However, almost 15% of the patients left against medical advice [Table 3].

DISCUSSION

The objective of this study was to describe the demographic features, mode of hanging, complications, and outcome of near-hanging patients presenting to a tertiary care hospital in south India. Less than one percent of our ED visits were due to near-hanging, but still, a significant number when compared to other published data in the literature. In this study, the male:female ratio was 1.33 with a male predominance (57.1%) while a study published from India shows that there was an overall female preponderance in suicides.[2] Suicide by hanging was the second most common method of suicide in India and was the preferred method among young married females and unmarried males.[2-3] The average age in our study was 31.1 years while the common age group reported was between 15 and 29 years in studies published from south India.[3] In our study, 70% of patients were in the age group between 21 and 50 years, 20% of patients were between 15 and 20 years and around 10% were aged 51 years and above [Table 1]. Mostly, young- and middle-aged patients resorted to near-hanging in this study. The reason for suicidal hanging were many and had variations from country to country. Alcohol abuse, interpersonal disputes, impulsive personalities, financial losses, academic, and romantic failures were the common reasons reported earlier.[2,3] In our study, the reasons reported were marital disputes, failed love affairs, loss of employment, and financial loss [Table 2]. Since this is a retrospective study the exact reason for hanging was not recorded in most cases.

The common mode of hanging was partial with some

| Table 3: Outcome of patients with near hanging |
|---------------------------------------------|
| **Discharge status** | **Number of patients (%)** |
| Total patients | 77 (100) |
| Alive | 64 (83.1) |
| Dead | 2 (2.6) |
| LAMA/discharge at request | 11 (14.3) |
| **Duration of hospital stay** | **Number of patients (%)** |
| ≤2 days | 30 (39.0) |
| 3-6 days | 33 (42.9) |
| ≥7 days | 14 (18.1) |
| **Patients requiring intensive care** | **Number of patients (%)** |
| Number of patients intubated and admitted to ICU | 57 (74.0) |
| Not intubated and discharged after observation | 20 (26.0) |

LAMA – Left against medical advice; ICU – Intensive Care Unit

Figure 1: Complications of near-hanging

Figure 2: Glasgow coma scale in near-hanging patients
part of the body touching the floor, while 42.9% committed complete hanging with full suspension above the ground. The period of suspension was not studied due to the retrospective nature of this study. The common materials used for hanging were dressing material like dupatta, saree, etc. and common household materials such as rope and curtains [Table 2]. A study published from Nepal reports partial hanging as the common mode of hanging and household materials such as rope, bed sheets, and shawl being used for hanging. A study from central India on completed hangings reported complete hanging as the common mode and nylon rope as the common material used. Salim et al. published that around one-third of patients presented with a very low Glasgow coma scale (GCS) of ≤8 and prognosis was favorable even when they had low GCS at presentation to the hospital. In this study, 80% of patients presented with low GCS of 13 and below, of which 55% of them had very low GCS of 8 or less and our outcome of 83.1% being discharged alive confirms the findings of the study by Solhi et al. One of the major causes of morbidity in near-hanging patients is hypoxic encephalopathy as reported by Sane et al. Hypoxia to the brain results in seizures, one of the common complications of near-hanging. Around 10% of patients in this study had seizures either before coming to the hospital or during their stay in the ED. Pulmonary edema is another well-recognized complication in near-hanging victims. One-third (29.5%) of patients in this study had pulmonary edema at presentation. Injury to the vertebral artery, status epilepticus, acute respiratory distress syndrome, cervical spinal cord injuries, and tracheal injuries are other rare complications of near-hanging reported in the past. Our study had none of the above mentioned rare complications recorded.

The mortality of near-hanging victims who reached hospital varied from 21% in a study published from Texas, USA to 15% from another study done in the USA. We report a mortality of 2.6%. Majority (83.1%) patients in this study survived till hospital discharge. Around 14% of patients left against medical advice and the reasons for which could not be ascertained due to the retrospective nature of this study. The duration of hospital stay was <2 days for 39% of patients while only 18% needed hospital stay of more than a week. Even though 74% of patients needed admission to intensive care unit with interventions such as intubation and mechanical ventilation the duration of hospital stay was <2 days among 39% of them. This proves that despite the low sensorium and poor clinical condition at presentation successful resuscitation results in good outcome. Around one-fourth of near-hanging patients needed only observation and subsequent discharge. Gunnell et al. published a review on near-hanging which insists that hospital treatment improves survival.

Psychiatric assessment in ED of those with various modes of deliberate self-harm identified those with strong intent, on-going depressive episodes, borderline personalities, and helped to screen for risk of further attempts. Psychiatric assessment and follow-up helped in recommending targeted interventions both at the individual level and at the community level. In our department, all patients with a history of deliberate self-harm who are stable are counseled by a social worker. All patients with near-hanging were referred for further evaluation by psychiatrists postdischarge.

**Limitations**

The retrospective nature of this study did not provide information into the reasons for hanging. The lack of follow-up information is another limitation to study the long-term outcomes.

**CONCLUSIONS**

Hospital care of near-hanging patients can positively affect their outcome. Active intervention with symptomatic management of common complications such as low sensorium, seizures, and pulmonary edema can further improve the outcome. Further studies on reasons for hanging will provide valuable information which can be used for prevention and screening.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

**REFERENCES**

1. WHO|Suicide Data. WHO. Available from: http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/. [Last accessed on 2017 Jan 11].

2. Mythri SV, Ebenezer JA. Suicide in India: Distinct epidemiological patterns and implications. Indian J Psychol Med 2016;38:493-8.

3. Radhakrishnan R, Andrade C. Suicide: An Indian perspective. Indian J Psychiatry 2012;54:304-19.

4. Atreya A, Kanchan T. Clinico-epidemiological study of near-hanging cases – An investigation from Nepal. J Forensic Leg Med 2015;33:35-6.

5. Ambade VN, Kolpe D, Tumram N, Meshram S, Pawar M, Kukde H. Characteristic features of hanging: A study in rural district of central India. J Forensic Sci 2015;60:1216-23.

6. Salim A, Martin M, Sangthong B, Brown C, Rhee P, Demetriades D. Near-hanging injuries: A 10-year experience. Injury 2006;37:435-9.

Ganesan, et al.: Near-hanging in emergency department
7. Solhi H, Pazoki S, Mehrpour O, Alfred S. Epidemiology and prognostic factors in cases of near hanging presenting to a referral hospital in Arak, Iran. J Emerg Med 2012;43:599-604.
8. Sane MR, Mugadlimath AB, Zine KU, Farooqui JM, Phalke BJ. Course of near-hanging victims succumbed to death: A seven year study. J Clin Diagn Res 2015;9:HC01-3.
9. Kang I, Kim JS, Lee KS. An unusual lethal cerebrovascular complication of near hanging: Traumatic injury of the vertebral artery. Acta Neurol Belg 2015;115:677-9.
10. Pesola GR, Westfal RE. Hanging-induced status epilepticus. Am J Emerg Med 1999;17:38-40.
11. Mansoor S, Afshar M, Barrett M, Smith GS, Barr EA, Lissauer ME, et al. Acute respiratory distress syndrome and outcomes after near hanging. Am J Emerg Med 2015;33:359-62.
12. Martin MJ, Weng J, Demetriades D, Salim A. Patterns of injury and functional outcome after hanging: Analysis of the National Trauma Data Bank. Am J Surg 2005;190:836-40.
13. Nichols SD, McCarthy MC, Ekeh AF, Woods RJ, Wahsimbi MS, Saxe JM. Outcome of cervical near-hanging injuries. J Trauma 2009;66:174-8.
14. 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;34:433-42.
15. Ferreira AD, Sponholz A Jr., Mantovani C, Pazin-Filho A, Passos AD, Botega NJ, et al. Clinical features, psychiatric assessment, and longitudinal outcome of suicide attempters admitted to a tertiary emergency hospital. Arch Suicide Res 2016;20:191-204.
16. Nordentoft M. Prevention of suicide and attempted suicide in Denmark. Epidemiological studies of suicide and intervention studies in selected risk groups. Dan Med Bull 2007;54:306-69.

Author Help: Online submission of the manuscripts
Articles can be submitted online from http://www.journalonweb.com. For online submission, the articles should be prepared in two files (first page file and article file). Images should be submitted separately.

1) First Page File:
Prepare the title page, covering letter, acknowledgement etc. using a word processor program. All information related to your identity should be included here. Use text/rtf/doc/pdf files. Do not zip the files.

2) Article File:
The main text of the article, beginning with the Abstract to References (including tables) should be in this file. Do not include any information (such as acknowledgement, your names in page headers etc.) in this file. Use text/rtf/doc/pdf files. Do not zip the files. Limit the file size to 1 MB. Do not incorporate images in the file. If file size is large, graphs can be submitted separately as images, without their being incorporated in the article file. This will reduce the size of the file.

3) Images:
Submit good quality color images. Each image should be less than 4096 kb (4 MB) in size. The size of the image can be reduced by decreasing the actual height and width of the images (keep up to about 6 inches and up to about 1800 x 1200 pixels). JPEG is the most suitable file format. The image quality should be good enough to judge the scientific value of the image. For the purpose of printing, always retain a good quality, high resolution image. This high resolution image should be sent to the editorial office at the time of sending a revised article.

4) Legends:
Legends for the figures/images should be included at the end of the article file.