



Original communication

## Clinico-epidemiological study of near-hanging cases – An investigation from Nepal

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## ABSTRACT

Hanging is one of the commonest methods of suicide. Epidemiological data of near-hanging patients from Nepal is limited. The present research from Nepal attempts to review the clinico-epidemiological profile of near-hanging patients. A retrospective review of case records was done for the near hanging patients admitted to a tertiary care teaching hospital in Nepal, between August 2012 and August 2014. Details regarding socio-demographic profile, circumstances of hanging, clinical details, and outcome etc. were obtained and examined. During the study period, 10 near hanging patients were admitted to the hospital. The majority of the patients were below 30 years. Mean age of the study group was 28.8 years. The GCS on arrival ranged between 5/15 and 15/15 with the mean GCS being 9.5/15. Hypoxic encephalopathy and cerebral edema were the only noted complications. None of the patient had a cervical spinal injury. All the patients survived the near hanging episode. The mean ICU and hospital stay were 3.9 days and 6.2 days respectively. Prompt resuscitation, active interventions and intensive care support favors a good prognosis. Psychiatric evaluation and support to the patients and their relatives is the key to preventing such attempts in future.

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### 1. Introduction

Suicide is a widely recognized public health issue globally. Suicidal behavior and rates are known to vary worldwide across the populations and cultures.<sup>1</sup> The same holds good for the methods of suicide that is said to depend on factors such as availability, accessibility, popularity, socio-acceptability, associated violence and lethality of the method.<sup>2</sup> Hanging is one of the most common methods of suicide worldwide.<sup>2</sup> Suspension of the body with a ligature around neck causes the ligature to tighten around the neck and exert pressure resulting in the compression of vital neck structures. The neck compression in hanging may be brought about by complete or partial suspension of the body leading to fatal outcome. The death occurs by a number of mechanisms including; venous and arterial occlusion, airway obstruction, carotid complex stimulation and disruption of the spinal cord.<sup>3</sup>

Once hanging is attempted, there is no retreat due to the rapid loss of consciousness and control. The death occurs within seconds

to minutes of the act. Although the majority of the victims die following the act, a few ones survive, if only timely intervention and aggressive resuscitation measures are ensured. An act of hanging, where the victim survives long enough to reach the medical care facility is referred to as 'Near hanging'.<sup>4</sup> Literature suggests a high pre-hospital mortality in hanging. However, if the victim survives to reach the hospital, the mortality rate steeply declines to 2.3%.<sup>4,5</sup> Even though neurological damage is reported in patients of near-hanging,<sup>6</sup> survival without neurological complications is possible and reported in literature.<sup>7</sup>

Epidemiological data of near-hanging patients in Nepal is scarce. In this regard, the present research is a first from Nepal that attempts to study the near-hanging cases in detail to describe the profile of victims, circumstances, prognosis indicators, clinical outcome, psychiatric evaluation, and the associated precipitating factors.

### 2. Materials and methods

The research was conducted in a tertiary care teaching hospital of Nepal. A retrospective review of case records of the emergency department (ED) of the hospital over a period of 2 years from

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August 2012 to August 2014 was conducted to identify the near hanging cases who presented to the ED. The cases were identified based on a manual search of the patient's registration log book. The hospital number of the cases marked as near hanging cases was noted and relevant files were obtained from the Medical Record Department (MRD). The search suggested that a total of sixteen such cases were admitted to the ED during the study duration. On detailed examination of treatment files, it was observed that three cases registered in the log book were in fact brought dead on arrival to the ED. Treatment files were not traced/incomplete in another three cases. Hence, the aforementioned six cases were excluded from the study.

The case details in form of socio-demographic profile, circumstances of hanging, and clinical details were recorded for all the ten cases included in the study. The specific variables examined in the study included; age and gender of the patient, duration of suspension, method and height of suspension in hanging and time taken to reach the hospital, and details about the clinical assessment and treatment obtained such as the Glasgow Coma Scale (GCS) on arrival, presence/absence of cyanosis, history of vomiting, presence/absence of ligature mark, intubation, use of steroid and mannitol, radiological findings, duration of Intensive Care Unit (ICU) and hospital stay etc. Causative factor for the commission of the act was recorded. History relating to previous suicidal attempt, psychiatric history and personal history of substance and alcohol abuse were also noted.

### 3. Results

#### 3.1. Overview of patient demographics and circumstances

The details about patient demographics and circumstances are shown in Table 1. There were equal number of males ( $n = 5$ ) and females ( $n = 5$ ) admissions of near hanging cases during the study period. The age of the patients ranged from 11 to 73 years. The majority of the patients ( $n = 8$ ) were aged below 30 years, mean age being 28.8 years. Based on the history and investigations, all the cases were construed as suicidal in manner.

Rope was used as the ligature material in seven cases, while shawl, bed sheet and a saree were used as ligature material in the remaining three cases. Eight out of the ten cases attempted hanging inside the house, one hanged herself by the tree in the verandah and another one hanged himself to the wooden beam in the cowshed. History suggested two patients to be in complete suspension and taken down. Though exact information on the duration of suspension was not available in most of the cases; it varied between seconds and few minutes based on the history provided by the family members. In one case the patient's mother said that she immediately rushed after she heard an unusual sound of something falling on the ground and rescued the victim. Likewise the estimated duration of suspension in one case was within 2–3 min and in another one was within seconds.

#### 3.2. Arrival to the hospital, severity assessment and treatment

Nine patients were brought directly to the emergency department (ED) of the teaching hospital, whereas one was a referred case from a rural health post. Ambulance was used as a means of transport of the patients in four cases; three cases were transported to the ED in taxis, whereas there was no mention about the mode of transportation used to reach ED for the remaining three cases (Table 1).

All the patients were found to be unconscious when first discovered by the family members. Glasgow Coma Scale (GCS) was not computed at the scene in any of the cases. The only referred

**Table 1**  
Characteristics of near-hanging cases.

Variable	Frequency (N = 10)
<b>Sex</b>	
Male	05
Female	05
<b>Age distribution</b>	
≤30 years	08
>31 years	02
<b>Type of suspension/hanging</b>	
Partial	05
Complete	02
NA*	03
<b>Ligature material</b>	
Rope	07
Others	03
<b>Appearance of ligature mark</b>	
Complete and prominent	03
Incomplete and prominent	03
Incomplete and faint bruising	01
Absent	03
<b>Precipitating factor</b>	
Family conflict	05
Failed love affair	01
Alcohol addiction	01
Postpartum psychosis	01
NA*	02
<b>Transportation used to reach ED (Emergency Department)</b>	
Ambulance	04
Taxi	03
NA*	03

\*NA – Information not available.

case from rural health post had a mention of GCS as 8/15 when examined at the referring center. Four out of the ten cases were unconscious on arrival to the ED. GCS was recorded on arrival at ED in all the cases, and ranged between 5/15 and 15/15. The mean GCS on arrival in the ED was computed as 9.8/15.

Ligature mark was documented only in 7 cases; three out of which were prominent and completely encircling the neck, three were prominent but were incomplete and in one case the mark appeared as a faint reddish contusion over the front and right side of the neck. Radiological investigation was performed in all the cases that did not reveal any fracture of cervical spine in any of the patients. The only patient with GCS 5/15 was intubated. All the patients were initially transferred to the ICU from ED. The duration of ICU stay for the patients ranged between 3 days and 9 days. Seven cases were shifted to the general ward on day 3, while the other three cases had an ICU stay of 5 or more days. Provisional diagnosis of hypoxic encephalopathy as a result of hanging was made in one of the cases that was intubated in ED. Computed Tomography (CT) scan in the same case revealed features of cerebral edema and mannitol was administered to relieve the intracranial tension. The duration of hospital stay ranged between 4 days and 14 days. The mean ICU stay and mean hospital stay were observed to be 3.9 days and 6.2 days respectively.

#### 3.3. Qualitative evaluation for the cause from psychiatric history

One of the ten patients refused psychiatric evaluation and treatment, three patients requested discharge on the second day of psychiatric treatment, while the other six patients were evaluated and assessed for more than 3 days in the psychiatric ward with at least a session of psychotherapy. Only one patient had a previous history of suicidal attempt one year ago. This patient was an elderly 73 years male and an alcoholic. There was no history of substance abuse in any of the other cases. Only one female patient had a documented history of psychiatric illness who was undergoing psychiatric treatment. She had developed post-partum psychosis

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