

Brought in Dead Cases in the Department of Emergency of a Tertiary Care Centre of Nepal

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Disclaimer(s): None

ABSTRACT:

The emergency department of a hospital is the most common entry point of dead on arrival or brought in dead cases. However, these cases are strongly dependent on pre hospital factors.

There are limited literatures regarding study of brought dead cases. The objective of this study was to evaluate the incidence, demographic patterns, associations with co morbidities, time of occurrence, and approximate distance between residence and hospital. This retrospective study was carried out in the emergency department of Nepal Medical College Teaching Hospital from June 1st 2015 to November 30th 2016. On analyzing the data retrieved from the records, incidence of brought dead cases was 0.5%. Out of 113 cases, 62 cases (54.9%) were males and 51 cases (45.1%) were females. The most common age group was 31-45 years with 22.1% cases. Forty-six percentages of cases did not have any known illnesses before they succumbed. Majority of cases in age group of 31-45 years did not have co morbidities. Among co morbidities, COPD was the commonest, and was more often seen in cases 61 years and older. Peak hour for presentation in most cases was 5am –9am and 5 pm- 9pm. Majority of cases were from inside the valley and most of them from within 5 km territory from hospital.

Key words: brought in dead, dead on arrival, Emergency department

INTRODUCTION

Dead on arrival (DOA), also dead in the field and brought in dead (BID), are terms used to indicate that a patient was found to be already clinically dead upon arrival of professional medical assistance, often in the form of first responders such as emergency medical technicians, paramedics, or police.¹ Some authors define “Brought in dead (BID) or dead on arrival (DOA) as patients who are brought into the hospital without any detectable heart activity and any other vitals suggesting life as verified by the attending physician.”²

Most of the time, the point of entry of the brought in dead cases is the emergency department of hospital. Though these cases land up in the emergency department, the only thing the medical staffs and the hospital can do is to sort out the medico-legal issues, as brought in dead is almost always a medico legal case. Brought in dead cases are strongly related to pre-hospital factors, like pre-morbid conditions of the case, seriousness and severity of clinical condition, distance to the hospital, or nature of injury or assault.

There is limited literature on brought in dead cases worldwide and till date no such studies have been done in Nepal. It is necessary to find out the factors contributing or influencing the occurrence of brought in dead cases in our population. So the objective of this study was

to evaluate the incidence, demographic patterns, associations with co morbidities, time of occurrence, and approximate distance between residence and hospital.

MATERIALS AND METHODS

This was a retrospective study carried out in emergency department of Nepal Medical College Teaching Hospital, Kathmandu. Data were collected retrospectively from records of brought in dead cases from June 1st, 2015 to November 30th, 2016, i.e. one and half year's duration. Information like age, gender, time of arrival to hospital, co morbidities, and area of residence were extracted from the records. Contributing factors for death as told by the visitors, if any, were also noted. Statistical analysis was done using SPSS 16 and Microsoft Excel.

RESULTS

The total number of patients attending the emergency department of NMCTH during June 1st 2015 to November 30th 2016 was 22359. A total of 113 (0.5%) cases of brought in dead cases were recorded during this one and half year period.

Out of 113 cases, 62 cases (54.9%) were males and 51 cases (45.1%) were females. Age ranged from a new born of one day to 97 year old individuals. There were 9 cases below one year old, and highest number of 25

cases (22.1%) was seen in age group of 31-45 years old. Higher number of brought in dead was seen in cases older than 31 years old. (Table 1)

Table 1: Number of Cases in different age groups

Age groups	Number(n)	Percentage(%)
<1year	9	8.0
1-15	9	8.0
16-30	7	6.2
31-45	25	22.1
46-60	21	18.6
61-75	21	18.6
>75	21	18.6
Total	113	100.0

In this study, 52 cases (46%) had no known clinical conditions as they were probably apparently healthy individuals before they died suddenly, as said by the patient party. Over twenty different clinical conditions were associated in remaining 54% cases. Among the known co-morbidities, chronic obstructive pulmonary disease (COPD) was the commonest (17 cases) followed by hypertension (8 cases). Hypertension and diabetes both were present in 5 cases. Seven cases had chronic kidney disease (CKD). There were 5 malignancy associated deaths, which included 2 cases of carcinoma of the lungs, one case each of carcinoma liver, carcinoma of the breast and lymphoma. (Figure 1) Associated co morbidities in different age groups are depicted in Table 2.

Table 2: Co morbidities in different age groups

Co morbidities	Age group(years)							Total
	<1year	1-15	16-30	31-45	46-60	61-75	>75	
TOF	0	1	0	0	0	0	0	1
Ca breast	0	0	0	0	1	0	0	1
Ca liver	0	0	0	0	1	0	0	1
Ca lungs	0	0	0	1	1	0	0	2
CKD	0	0	0	3	1	3	0	7
CLD	0	0	0	2	1	0	1	4
COPD	0	0	0	1	2	7	7	17
COPD, Corpulmonale	0	0	0	0	0	1	1	2
COPD, HTN	0	0	0	0	1	0	0	1
CVA	0	0	0	1	0	0	2	3
DCM	0	0	0	0	0	1	0	1
Depression	0	0	0	1	0	0	0	1
DM, LBBB	0	0	0	1	0	0	0	1
Fracture spine	0	0	0	0	0	0	1	1
Heart block	0	0	0	0	0	0	1	1
HTN	0	1	0	1	4	1	1	8
HTN, DM	0	0	0	0	1	3	1	5
Lymphoma	0	0	0	0	0	0	1	1
None	9	7	7	14	7	3	5	52
PTB	0	0	0	0	0	1	0	1
Seizure	0	0	0	0	0	1	0	1
Sepsis	0	0	0	0	1	0	0	1

Co morbidities were more commonly associated in the age groups of 61-75 years and >75 years with 17 and 15 cases respectively. There was no co morbid condition in cases less than one year old. Two cases had co morbidities

in 1-15 years age group. One 14 month old female child had Tetralogy of Fallot (TOF) and one 18 months old male had high grade fever and was referred from outside the valley (Sarlahi). (Table 3)

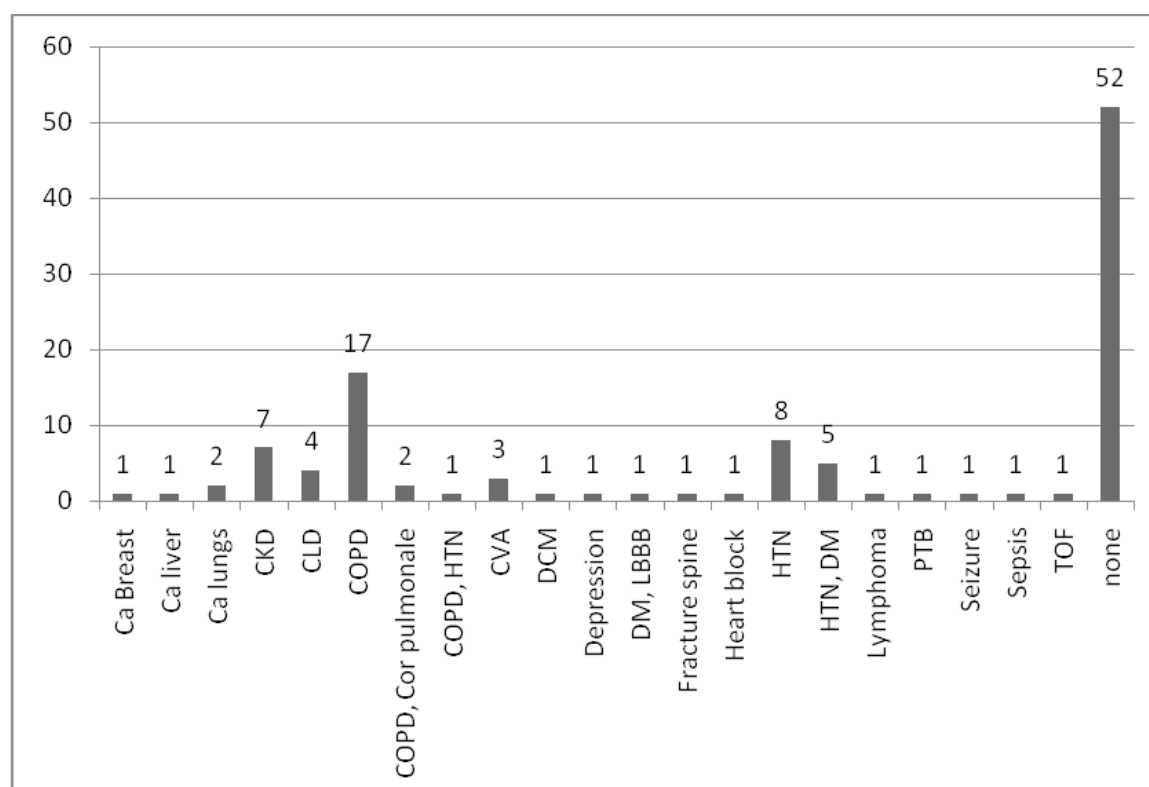


Figure 1: Associated comorbidities [Ca-carcinoma, CKD-chronic kidney disease, CLD-chronic liver disease, COPD-chronic obstructive pulmonary disease, HTN-hypertension, CVA-cerebrovascular accident, DCM-dilated cardiomyopathy, DM-diabetes mellitus, PTB-pulmonary tuberculosis, TOF-Tetralogy of Fallot, LBBB-left bundle branch block]

Table 3: Association of co morbidities in different age groups

Age group	Co morbidities		Total
	Yes	No	
<1year	0	9	9
1-15	2	7	9
16-30	0	7	7
31-45	11	14	25
46-60	14	7	21
61-75	17	4	21
>75	15	6	21
Total	59	54	113

Among cases who didn't have history of any co-morbidities, 7 cases gave history of sudden loss of consciousness(LOC), there were four cases of hanging, three cases had fever, three cases were road traffic accidents(RTA), two cases had fall from height, two cases had sudden shortness of breath(SOB), one case each of drowning, sudden haemoptysis, poisoning, abdominal pain, electrocution, landslide, seizure, physical assault, vomiting and haematemesis. (Figure 2)

Majority of cases (28, 24.8%) arrived to the hospital during the hours of 5pm to 9pm followed by 22 (19.5%) cases during 5am to 9am. (Table 4)

Table 4: Time of arrival of brought dead cases

Hours	Number(n)	Percentage(%)
5am-9am	22	19.5
9am-1pm	16	14.2
1pm-5pm	18	15.9
5pm-9pm	28	24.8
9pm-1am	19	16.8
1am-5am	10	8.8
Total	113	100.0

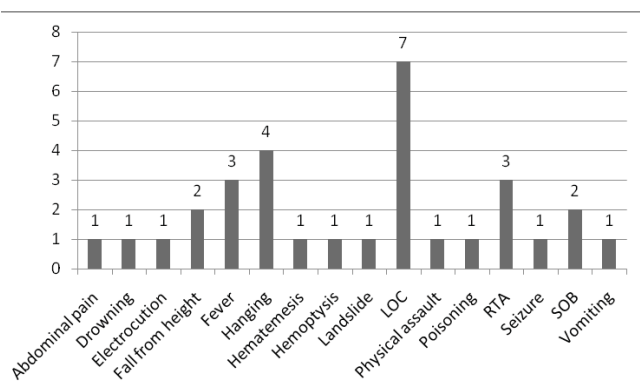


Figure 2: Contributing factors for sudden death in cases not having recorded prior ailments [LOC-loss of consciousness, RTA-road traffic accident, SOB-shortness of breath]

Most of the cases(n=98, 86.7%) were from inside the valley. Only 15(13.3%) cases were from outside the valley. Two cases of RTA, one case of electric shock, one case of sudden haemoptysis, one case of sudden

haematemeses were brought from border of valley i.e. Sindhupalchok, rest of others were referred cases with comorbidities. On analyzing the distance of cases' residence to hospital, majorities were from within 5 km territory of the hospital.

DISCUSSION

The terms 'Dead on arrival' and 'Brought in Dead' are used synonymously; in our context it is called 'Brought dead cases'. There are very few published studies regarding brought in dead cases and most of the literatures are from developing countries. However, to our knowledge, till date, there are no such studies from Nepal. Brought dead cases are medico-legal cases, hence postmortem examination may be essential in such cases to establish the cause of death. Most cases are premature, preventable deaths from severe injuries and critical illnesses. Khan *et al.* has mentioned that about 10-50% of such deaths occur before reaching the hospital and hence recorded as brought in dead cases.³ The exact incidence of brought in dead cases in Nepal is not known. In our study, we found that 0.5% of the cases in Emergency were brought dead cases. The incidence of brought in dead cases varied from 0.22% in Taiwan⁴, to 0.6% in Pakistan. In mortality studies of the emergency room, brought in dead cases accounted for 3.6% of mortality in Nigeria⁵, 15% in Ethiopia⁶ and 70% in Pakistan.⁷ Brought dead cases were more in males in our study with a male to female ratio of 1.2:1. This finding was consistent with other studies as well.^{2,3,4,8}

In our study, almost 78% of cases were in and above the 4th decade, which included 22.1% in 31-45 years age group and 18.6% each in 46-60 years, 61-75 years and >70 years age groups. The age group of 61-75 years constituted the largest group in a study done by Wang JS *et al.*⁴ In a study from Pakistan, 46.3% of the patients belonged to productive age groups of 20-49 years.³ Variations were seen in studies from Ghana and India.²

In our study, 46% cases did not have any known clinical conditions before they succumbed which was consistent with the findings of a study conducted in Ghana.² Out of 54 cases without co morbidities, maximum (n=14) belonged to the age group of 31-45 years. This was also similar to a study by Orishet *al*²

This may be an alarming finding as these age groups are usually the productive young adults who are in the prime of their lifetime. This could be due to insidious undiagnosed cardiovascular diseases and hypertension which are gradually becoming more prevalent in young adults these days. The commonest co morbidity seen was COPD, which was more in cases who were of age 61 years and above. In a prevalence study of non communicable diseases in Nepal, COPD was the commonest (43%) and age group was comparable to our study.^{9,10}

Majority of cases (n=28, 24.8%) arrived to the hospital during the hours of 5pm to 9pm followed by 22 (19.5%) cases during 5am to 9am. This time corresponds to the pre and post office hours, because of which the patient party might have noticed seriousness of the cases and hence brought the cases to hospital.

We found that maximum number of cases (n= 96, 86.7%) were from inside the valley, majority being from within 5 km territory from the hospital. Jon Nicolle *et al.*, in their study concluded that increased journey distance to hospital appeared to increase risk of mortality and their data suggested that a 10-km increase in straight-line distance was associated with around a 1% absolute increase in mortality.¹¹ Though distance may not have contributed to mortality in our study, other pre hospital factors like availability of ambulance, use of pre hospital life support methods and ignorance about the seriousness of the condition might have played a role.

In this study, the cause of death could not be identified in majority of cases, more in productive age groups. This study may have pre hospital and on site emergency care related implications. Proper education to improve health seeking behavior will help to prevent cases of avoidable sudden death, especially in young adults as they might have presented so late in their course of medical illness that they were unfortunately unable to benefit from resuscitative care. Training the general population regarding the basic life support procedures may also be helpful in preventing certain deaths.

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