

Patient's Mode of Transportation Presented in the Emergency Department of a Tertiary Care Centre, Kavre, Nepal

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ABSTRACT

Background

In many developing countries, emergency medical services, especially pre-hospital emergency care, has long been neglected. It is the major obstacle for provision of timely care. Patients are regularly brought to emergency department by the relatives in taxis, bus or other readily available mode of transportation that lacks emergency medical services. Development the Nepal Ambulance Service established its first proper ambulance service in Nepal in 2011 and Dhulikhel Emergency Medical Services in 2013 at Dhulikhel Hospital, Kathmandu University Hospital. Proper pre-hospital emergency medical service can improve survival rates.

Objective

To determine the mode of transportation used by patients to arrive at the emergency department and effectiveness of medical services specific to Dhulikhel Hospital, Kavre, Nepal.

Method

In this study, 160 patients who arrived to emergency department during one-month period were included. The emergency physicians and paramedics collected data on a predesigned questionnaire regarding demographic details, mode of transport used by the patients to arrive emergency department, reason for not using ambulance, knowledge on emergency medical services at Dhulikhel Hospital and their acceptability for those services.

Result

Mean age of the patients was 46 ± 18 years and (52%) were men. Out of them, only 31% arrived to the emergency department by ambulance while the rest other patients used other forms of transport such as private vehicles (21%), bus (16%), taxi (13%), motorbike (11%) and van (7%). Among 50 patients who used ambulance, 24% of the patients who used Dhulikhel Hospital ambulance received medical care and trained medical staff services; all patients were satisfied with the services. 155 out of 160 patients mentioned the need of a trained medical personal in ambulance. The mean duration for waiting time for ambulance was 33.78 minutes. The main reasons to not using ambulance were they did not know the ambulance number, ability to find other vehicles easily and having own private vehicle.

Conclusion

A prominent proportion of patients did not arrive by ambulance to the emergency department and the main reason was that they didn't know the number of ambulance service. Developing three-digit phone number for ambulance service at the local level will make people easier to remember and contact. Similarly, education and training must be developed to improve emergency medical services. These strategies along with team management of patients could significantly improve patient care in Nepal.

KEY WORDS

Emergency care, Mode of transportation, Ambulance, Dhulikhel emergency medical services

INTRODUCTION

Every emergency department in a hospital acts as a portal for patients coming to the hospital. Non-availability of pre-hospital management and trauma centers is the major obstacle for provision of timely care in developing countries of South Asia.¹ It can lead to decreased survival rates especially in trauma cases, while proper pre-hospital emergency medical service can improve survival rates.^{2,3}

Sophisticated Emergency Medical Service (EMS) is limited to developing countries only however, inadequate ambulance services are available in the capital city of Nepal, and there is lack effective EMS.^{4,5} The well-equipped ambulances with trained paramedics can save many lives during the golden hours of trauma care.⁴

Development the Nepal Ambulance Service (NAS: www.nepalambulance.org), established its first proper ambulance service in Nepal with the mission "to provide rapid ambulance transport to hospitals along with lifesaving medical care by trained emergency medical technicians for sick and injured people regardless of ability to pay" in 2011.⁶

Emergency medicine is one of the youngest recognized specialties in Nepal, and its growth in clinical practice and academic development has been challenging.⁵ Dhulikhel Emergency Medical Service (DEMS) was established in May 2013. Although a few studies regarding the mode of transportation to the emergency department have been conducted in Nepal, no such studies have been conducted in Dhulikhel Hospital. This study therefore aims to determine the mode of transportation used by patients to arrive at the emergency department of Dhulikhel Hospital and effectiveness of medical services specific to Dhulikhel Hospital. The results of this study will serve as a reference to gauge the effectiveness of DEMS and help in providing better service to improve patient outcomes.

METHODS

After approval of Institutional Review Committee, Kathmandu University School of Medical Sciences, an observational descriptive study was conducted on all patients arriving at emergency department (ED) at Dhulikhel Hospital, Kathmandu University Hospital in between 1st-30th November 2013. It is an independent, not for profit, non-government institution, tertiary care center that was conceived and supported by the Dhulikhel community, established in 1996. Informed written consent was obtained from the patients or his/her relatives in case of the patient who couldn't answer the questions.

Data was collected on a predesigned questionnaire form regarding demographic details, mode of transport used by the patients to arrive emergency department, reason for using other vehicles rather than ambulance, knowledge on emergency medical services at Dhulikhel Hospital,

Kathmandu University Hospital and their acceptability for those services. Physicians and paramedics working in the emergency department collected data using the predesigned questionnaire. Non-probability purposive sampling technique was used to collect data. Data were entered into the Microsoft Excel and analyzed by Statistical Package for the Social Sciences (SPSS) version 16; descriptive statistics including frequency, mean, range, and standard deviation.

RESULTS

A total of 160 patients were seen at ED. Mean age was 46 ± 18 years and (52%) were men. Out of them, 72% were from Kavre district of Nepal where Dhulikhel Hospital is located and 28% of the participants were other districts of Nepal. Among those patients, only 31% arrived to the ED by ambulance while the rest other patients used other forms of transport such as private vehicles (21%), bus (16%), taxi (13%), motorbike (11%), van (7%) (fig. 1).

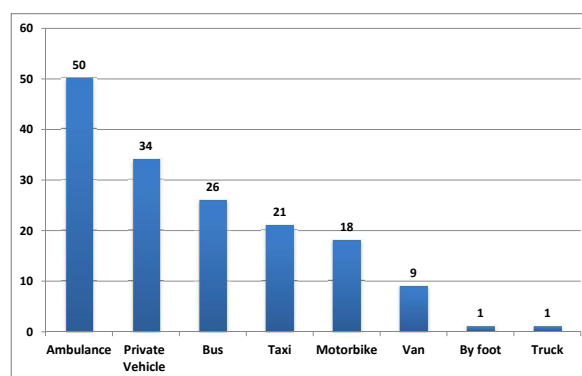


Figure 1. Mode of transport used by the patients arriving to Emergency Department (N=160)

There were 54 patients who actually called for an ambulance but only 50 patients got the service. Among them only 24% of the patients received ambulance care and trained medical staff services. Among 50 patients who used ambulance, 24% of the patients who used Dhulikhel Hospital ambulance received medical care and trained medical staff services. 155 out of 160 patients mentioned the need of a trained medical personal in ambulance. They were also asked if they were aware that ambulances in developed countries are staffed with trained medical personnel. Again, an overwhelming majority (147 out of 160) answered that they were aware of such practices in developed countries (Table 1).

Out of the 50 patients, who arrived in the emergency department of Dhulikhel Hospital in an ambulance, 35 (70%) of them reported that they had to wait for the ambulance for less than 30 minutes (fig. 2). The mean duration for waiting time for ambulance was 33.78 minutes.

The patients who arrived to the ED by using means of transport other than an ambulance were asked for the reason for not using the ambulance. The main answers

Table 1. Details of ambulance services for the transportation of the patients who arrived to the emergency department

Details of ambulance services	Yes	No	Total (n)
Did you call an ambulance?	54(34%)	106(66%)	160
Did the patients receive ambulance care and trained medical staff services those who were transported via ambulance?	12(24%)	38(76%)	50
Was the ambulance from Dhulikhel Hospital?	13(26%)	37(74%)	50
Were the patients satisfied with ambulance service?	32(64%)	18(36%)	50
Do you feel a trained medical person should be in an ambulance?	155(97%)	5(3%)	160
Are you aware that ambulances in developed countries are staffed with trained medical personnel?	147(92%)	13(8%)	160

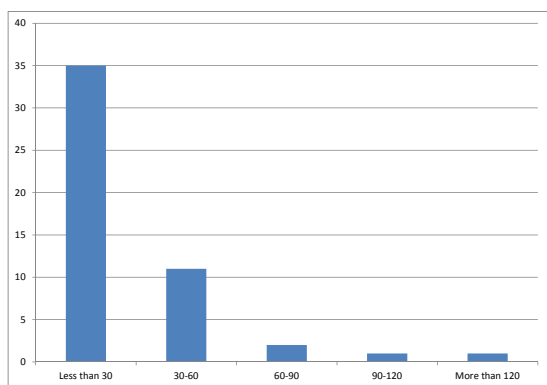


Figure 2. The waiting time for the participants for the ambulance after making the call

for not using the ambulance were did not know the ambulance number, ability to find other vehicles easily, having own private vehicle and the medical condition of the participant not being severe enough to warrant the use of an ambulance (Table 2).

DISCUSSION

This study demonstrated a trend towards a higher mode of transport for the patients who arrived to the ED was via other vehicles rather than ambulance. However Mohammad reported that the patients who arrived via ambulances were evaluated earlier, had more emergent investigations, and was more frequently admitted to the hospital.⁷ It hasn't been reviewed in such perspectives in this study. Rebecca Walker, a Stanford University emergency medicine professor said "It is helpful to have people get to the hospital quickly, but there is no difference between the ambulance and a taxi if the person is not really trained to use equipment to save lives on the way".⁸ Similar findings was reported in a study done at Patan Hospital that examined the modes of transportation for patients presenting to the ED indicated that only 9.9% of the patients had arrived by ambulance. The majority of patients had arrived by taxi (53.6%), followed by bus (13.5%) and private vehicle

Table 2. Reasons for the patients not using an ambulance service (N=110)

Reason for not using ambulance service	Total
I called the ambulance but it was out of station	6
I do not know the telephone number	24
I could find another vehicle more easily	25
The ambulance is too expensive	7
The wait for ambulance is too long	4
There is no accessible road to my house	8
Taking an ambulance would not make a difference	2
My medical condition was not severe enough to take an ambulance	14
I live nearby the hospital	2
I have my own private vehicle	17
Travelling in the ambulance is not comfortable	1

(11.4%).⁴ Similar finding were reported in other studies too where patients are regularly brought to the ED by the relatives or bystanders in a private cars, taxis or other readily available mode of transportation.⁹⁻¹⁰ However, a study has shown that in England, more than 60% of patients come to the facility provider via ambulance.¹¹

Considering the municipality of Kathmandu has a population of 975,453, it can be assumed that there is more than one emergency per day that requires pre-hospital emergency medical services.¹²

The mean duration for waiting time for ambulance was 33.78 minutes. Kathmandu is routinely gridlocked in massive traffic jams and mountains make up for the most of the country's terrain, so it takes a long time for ambulances to reach hospitals.⁸ A lack of trained staff on board to perform emergency life-saving procedures greatly decreases patients' chances of survival.^{4,5,11} Emergency medical services (EMS) systems are a fundamental component of the public health safety net in countries with mature emergency medicine enterprises and disaster response capabilities.⁶

After several years of extensive research, coordinated planning, systems development, and pre-hospital emergency care trainings, NAS began offering pre-hospital emergency EMS in 2011 and in China, it has been in development since 1980.^{5,13}

Dhulikhel Hospital ambulance was used by 26% of the patients who arrived ED by ambulance and they all received medical care while on the way to hospital. All patients were satisfied with the medical care they received. Dhulikhel Emergency Medical Service (DEMS) can therefore be considered a pioneer in providing pre-hospital emergency medical service through trained medical personnel in ambulance. This is a novel approach in Nepal and results in developed countries have shown that early intervention by trained paramedic decreases mortality rates in trauma cases.¹⁴⁻¹⁸

The World Health Organization predicts that by 2020, road traffic injuries will be the third largest contributor to the global burden of disease, with 90% of the associated mortality occurring in low-income nations. Therefore the time has come to ensure that all the ambulances in the country be staffed with trained medical provider and to implement effective EMS to increase survival rates.⁶ Similarly curriculum planning should be done to select skills that offer clear benefits to the patients. Some of the key skills that implemented in a course by the team of Stanford University to Nepalese medical providers were; IV catheter placement and fluid replacement, basic life support, emergency childbirth and obstetric skills, trauma management, airway maneuvers, hemorrhage control, triage and disaster response, leadership and communication, medical managements of disease conditions.⁶

The main reasons for not arriving on an ambulance were that they did not know the ambulance phone number and ease in finding another vehicle. The condition of participants about ease to finding another vehicle is the positive factor. However, not knowing the number for ambulance service need to be noted strongly. Before NAS, there was no 3-digit toll-free number in Nepal to call for

medical assistance. An important milestone for NAS was obtaining permission to use 102 as its operating number in 2011.¹⁹ Developing three-digit phone number for ambulance service at the local level will make people easier to remember and contact.

CONCLUSION

The study demonstrated that prominent proportion of patients did not arrive by ambulance to the emergency department and the main reason was that they didn't know the number of ambulance service. Patients who arrived via ambulance received medical care by trained medical personnel on the way to hospital and all patients were satisfied with the care. Developing three-digit phone number for ambulance service at the local level will make people easier to remember and contact. Similarly, since there is several evidences that early intervention by trained paramedic decreases mortality rates in trauma cases, education and training must be developed to improve EMS in a sustainable fashion. These strategies along with team management of patients could significantly improve patient care in Nepal.

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