

## Review Article

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## Help Alert: A First-Aid Training Policy for Drivers and a Call-for-Help Application for Timely Prehospital Assistance by Traffic Bystanders

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### ABSTRACT

The statistics of injuries from road traffic accidents have exceeded 50 million people annually, costing over 1.35 million lives. One of the causes of this massive loss is attributed to the inadequacy and delay in pre-hospital care. Accordingly, after the process of literature review and interviews with paramedics and the general population, this study has proposed (1) a first-aid training policy where drivers are mandated to undergo traffic safety and first-aid training before the issue of driving licenses, and (2) a call-for-help application during emergencies, in order to raise the number of first-aid responders at the sites of incidents. This is because first responders from bystanders tend to arrive approximately 3 minutes in advance of the average arrival time of ambulances. By developing this sequential solution, there will prospectively be a higher number of medically trained first-responder-bystanders that can ultimately save the time-sensitive injuries of traffic accidents.

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### Introduction

Trauma is reportedly one of the most immense leading causes of death globally, with traffic accidents topping the category. According to the World Health Organization (WHO), the number of people injured or disabled by road traffic accidents was as high as 50 million people and contributed to over 1.2 million deaths each year. This high fatality rate is projected to rise continuously if no preventive policy is to be induced.

The main causes of deaths and disabilities regarding traffic injuries are the obstruction of the airway and uncontrolled bleeding, both of which can be prevented by early first-aid interventions. However, the inadequacy of prehospital care, either from the non-responsive bystanders or from the increased responding interval for ambulances to reach the sites of incidents, has hindered such injuries from being successfully prevented. As reducing the responding interval of ambulances would require a collaborative work of various departments in charge, reducing the bystander effect will eventually provide a more suitable solution to promptly assist the victims of traffic accidents. A research suggested that individuals without any healthcare qualifications are 80% less likely to have used first aid at a road traffic accident; therefore, the objective of this study is to increase medically trained providers

who can perform immediate and adequate first aid in traffic injuries.

### Method

A total of 24 English-written literature, including 2 systematic reviews, within the past twenty years were reviewed. This study emphasized the problems and situations regarding road traffic injuries in the Asian-pacific countries, nonetheless, consistent findings from other regions were also included. Various keywords for searching tools were used in order to seek a causative relationship between the presence of immediate and appropriate first aid in prehospital care and the increased survival rate and reduced occurrence of morbidity. The study was also supplemented by interviews of medical staff and the general population in order to testify the validity of the proposed solution.

### Findings

First aid is the provision of basic care prior to the arrival of emergency medical services, aiming to preserve life, prevent further complications or injury, and promote recovery. Although every second counts in trauma care, especially for time-sensitive traffic accidents, the response time of the emergency care of many places, particularly the metropolitans and urbanized settings, often shows delays in arrival mainly due to commutation. Accordingly, first aid response from well-trained bystanders is considered to become a pivotal solution, concerning mortality, morbidity, and recovery of the patients. A research stated that there is a

significant reduction of 3 minutes and 8 seconds in response time by bystanders or community first responders comparing to that by the ambulance crew, taken into account that this time interval may vary from places to places.

Numerous literatures indicated positive correlations between the provision of proper first aid and outcomes of patients in traffic accidents. In a research based in Vietnam, those who received first aid treatment have a significantly lower impairment or difficulty in mobility, self-care, usual activities, and discomfort or pain. Likewise, if all bystanders perform first aid, the survival rate of patients may increase up to 32% than 8% when left alone, according to a study in Canada. Moreover, a study conducted in Bangladesh suggested that individuals assisted by medically trained first-aid providers in non-fatal injuries are more likely to show improvements and recoveries by 1.28 times than those assisted by untrained providers.

As indicated by the aforementioned findings, although having bystanders reach out to help in traffic injuries will help in terms of a timely response interval, the quality of first-aids is also critical. Therefore, it is essential that first responders are trained sufficiently. First-aid training intervention has resulted in improvements in the first-aid knowledge of participants, both theoretically and practically, with reduced mortality being reported. Out of 562 study cases in Norway, approximately 35% were accompanied by at least one medically trained bystander. These bystanders tend to give better first-aid assistance than those who have never been trained.

Aside from inducing correct and adequate first-aid practices, first-aid training is also associated with more immediate response of bystanders. This is due to the enhancement of influential factors in the use of first aid, including healthcare qualification, level of education, and first aid training. After training, 30% of the participants reported to have used their skills, and 41% took fewer risks in traffic. Additionally, a trained participant has provided first-aid care in 20% of traffic crashes with one-third having used their skills from the training program.

### **Proposed Solution**

The research for the solution was conducted with the objective of increasing medically-trained prehospital care providers for immediate and adequate first aid in traffic injuries. The proposed solution is comprised of two consecutive parts: (1) a policy of making first-aid training, both through hands-on and theoretical lessons, mandatory for individuals who wish to take driving license examination or to renew their driving licenses; and (2) an application that registers medically-trained volunteers which eases accessibility for users to prehospital care by these volunteers.

### **Policy**

The policy aims to make an addition to the driving license issuing qualification – traffic safety and first-aid training. By mandating drivers to undergo traffic safety lessons, there is a higher likelihood that participants will avoid traffic risks, according to a study. Another significant prospective outcome of the first-aid training policy is the increase in the potential that participants will step up and get involved in lifesavings on sites of traffic injury as bystanders, which is the emphasis of this study. Furthermore, driving licenses are required to be renewed every particular period, and so does the first-aid knowledge and skills, if the training policy for drivers are to be established. After the completion of the training session, participants are subsequently given chances to register on the application as volunteers.

### **Application**

The application is the latter phase of the first-aid training policy, aiming to provide users with effective and immediate medical access (volunteers) during emergencies, as well as to facilitate communication between volunteers and users with communicational difficulties, such as foreigners or individuals with communication disabilities.

The process for application utilization is as follow:

- Personal information: Everyone, whether willing to register as users or as volunteers, are required to fill in general personal information, background of medication and medical history, contacts during emergencies, and other relevant information necessary for identity verification.
- Role: The application is divided into two major platforms – platform for volunteers and platform for users.
- The platform for volunteer is then divided into (1) the first-responder section for those who perform first-aid on the site of injury, and (2) the translator section that serves to assist the communication between healthcare staff and users with linguistic difficulty or communication disabilities.
- The user platform will compose of facilities such as location tracking and call-for-first-aid-responder service. Additional facilities for communication with disabled users are also provided, such as chatting and video calls.
- During emergency, users are required to press the SOS buttons in order to access further assistance.
- A notification will be sent to ensure whether the user have called for an ambulance. If yes, the application will proceed to the next step; if not, the application will automatically notify the ambulance before proceeding (may take longer to respond).
- Volunteers in proximal distance to the site of injury will be notified of the incident, in which the notification will be sent spontaneously until at least one volunteer is present at the site. Additionally, the navigating system will demonstrate precise locations of both the user and the volunteer and an estimation of the arrival time.

### **Conclusion**

Most of the injuries from road traffic accidents could be mitigated by early first-aid interventions. Despite so, the deficiency in prehospital care has always been the main hindrance, resulting in increasing medical complications and mortality every year. Therefore, it is crucial to emphasize on educating traffic users on traffic safety and first-aid practices and to increase the number of active traffic bystanders to take part in the scenes. This 2-step project was proposed with the hope to increase the number of timely first-aid care providers that will be the key to increase of chance of survival for the time-sensitive injuries of traffic accidents [1-24].

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