REPORT OF RESEARCH RESULTS
REPORT OF UTILISATION OF RESEARCH GRANT

(a) Title:

Factors predicting clinical outcomes in patients sustain road traffic injury during the emergence phase.

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(c) Summary: Include the outline and conclusions of the research

The results revealed that majority of patients (74.6%) had accident on the main road, using motorbike (81.15%), and was a rider or driver (70.77%). Around half of them used the motor vehicle with expired motor compulsory insurance. Around 75% did not wear any safety equipment protection, and 64% drank alcohol before driving. More than a half (54.6%) was classified into Emergency Severity Index (ESI) level I. The majority of injured body region was head (72.31%) and extremities (60.58%); 59.2% had Injury severity Scores (ISS) ranged from 25-49.). Probability of survival scores was 85.8%.

On ED arrival, there were 208 patients (40%) who were in shock stage. At ED discharge, 41.35% recovered from shock, but 51.92% were still in shock, and 6.73% died. At emergency department discharged, 62. 9% of them were not in shock stage, 33. 8% demonstrated shock, and 3.3% died.On scene care and severity of injuries can explain the clinical outcomes at emergency department discharged at 4. 8% . At the phase before hospital discharge, 9.8% were discharged from the hospital with permanent disability, and 65.2% still had at least 1 organ dysfunction. There were 24.2% of patients who died during hospital stay. The finding also indicated that on scene care, severity of injuries, patient's age, having valid motor vehicle compulsory insurance and MSI at emergency department discharged, can explain clinical outcomes before hospital discharge at 25.6%. Patients who were transferred from the scene by advanced ambulances showed the odd of survival rate 2.076 times higher (95% CI, 1.215-3.545; *p*=.007) than those who were transferred by the foundation's van, personal pick up van or taxi.

Conclusions of the research: The patients with severe road traffic injury should receive effective on scene management and being transferred by an advanced ambulance. Modified Shock Index should be utilized as a standard scoring system for patients with severe injuries. In order to improve clinical outcomes, prevent permanent disability and decrease mortality among patients with severe injuries, hemodynamic status should be monitored and managed throughout their hospital stay.

(d) Aim of Research: This study aims to describe clinical outcomes in patients sustain road traffic injury during the emergency phase and to explore which factors including type of responder, transferring time to tertiary care hospital, on-scene care, time to treatment by emergency severity index level (ESI), years of experience in triage of the triage nurses, training experience in triage skills of the triage nurses, patient's age, types of insurance, distance from the injury scene to the hospital, types of injury and severity of injury, can predict their clinical outcomes at Emergency Department and before hospital discharge.

(e) Method of Research: A cohort study research design will be employed to prospectively follow the clinical outcomes of the patients from the initial phase of their treatment in emergency department (ED) until their discharge from the hospital. The researcher will collect data in adult patients sustaining injury and visit ED for emergency treatment. The research settings include tertiary care hospitals in Bangkok metropolitan region including the following five provinces: Bangkok, Nakhon Pathom, Nonthaburi, Pathum Thani, and Samut Prakan. The data will be collected from May 2016 until it reaches the numbers of the studied sample (520 patients).

Progression: Finished.

(f) Results of Research: The findings obtained from this study are as follow:

1 .The characteristics of the patients who sustained injuries, the majority were male)84(% with ages ranging from 18 to 88 years, an average age was 34.87 ± 16.55 years . Around 65% of the accident occurred from 6 p.m .to 6 a.m. and 35.5 % occurred during the weekend . Majority of patients (74.9%) had accident on the main road, using motorbike(81.15%) and was a rider or drive (70.77%). Fifty one point three percent used the motor vehicles with motor compulsory insurance while 48.7 %did not eligible .All of them had blunt injury . Around 75 % did not ware any safety equipment protection and 64 % drank alcohol before driving . Eighty five percent got access to emergency care system by the emergency telephone numbers .

By standers was the majority of first responder (91.6%) and 70.9% of first person provided care were the personnel of foundation. Around 80% received stabilization and 42.5% received pressure dressing on scene. The directly distance from the injury scene to the tertiary care hospital ranged from 0.1 to 32.7 kilometers with the mean of 7.84 kilometers (SD±6.28). Around 91.3% arrived to the first hospital within one hour and 57.9% got access to the tertiary hospital within one hour. The majority (99.4%) received triage within 5 minutes after Emergency Department (ED) arrival and received treatment within 4 minutes after triage (88.8%).

Four point two percent came to hospital with no systolic and diastolic blood pressure, 3.3% no respiratory rate and 2.3% no pulse. GCS fewer than 9 was 44.2% . SpO_2

less than 95% were 23.2%. ESI level I was 54.6%. The majority of body region of injury was head (72.31%) and extremities (60.58%). ISS (25 – 49) had 59.2%. RTS > 5 had 80.6%. TRISS > 0.5 had 85.8%. Around 44% of the patients stayed in ED within 120 minutes (mean: 188.79, SD ± 321.77 minutes). The average of length of stay (LOS) in ICU was 4.3 days. Total LOS in the hospital varied from 1 to 106 days with the mean of 17.66 days (SD ± 18.01 days)

Characteristic of triage nurse, the emergency nurses worked as triage nurses an average of 13.02 years (SD±8.02). There were more than 80% of triage nurses who completed the training on BCLS, ACLS, ATLS, and triage. 8.9% who worked as triage nurses did not receive formal training on triage.

2 .Clinical outcome after treatment, on ED arrival, there were 208 patients) 40 (% demonstrated shock . At ED discharge, 41.35 % recovered from shock but 51.92 % still demonstrated shock, and 6.73% died .In the group who did not demonstrate shock on ED arrival)312 patients, 60(% , at ED discharge, 21.79 % turn to shock, and 0.96% died. The clinical outcomes before hospital discharge among the patients who demonstrated shock from ED arrival until ED discharge) 108 patients(, 36.11 % died during their hospital stay, 14.81 %had permanent disability and 49.07 %had at least one organ remained dysfunction. The clinical outcomes before hospital discharge among the patients who demonstrated shock from ED arrival but recovery from shock at ED discharge) 86 patients(, 32.56 % died during their hospital stay, 4.65 % had permanent disability and 62.79 % had at least one organ remained dysfunction

On the other hand, 312 patients)60 (% arrived in the ED without demonstrated shock. At ED discharge 241 patients)77.24 (%in this group still without demonstrated shock but 68 patients) 21.79 (%demonstrated shock and 3 patients) 0.96 (%died at ED. The clinical outcomes before hospital discharge among the patients who did not demonstrate shock from ED arrival until ED discharge, only 11.2 % died during their hospital stay, 9.96 % had permanent disability and 78.84 %had at least one organ remained dysfunction .On the other hand, 68 patients started to develop shock after ED admission .Among this group 22.06% died, 10.29 % had permanent disability and 67.65 % had at least one organ remained dysfunction. Patients who were transferred from the scene by advanced ambulances showed the odd of survival rate 2.076 times higher)95 %Cl, 1.215-3.545; *p*.=007 (than the patients who were transferred by other vehicles such as the foundation's van, personal pick up van or taxi.

3 .Factors effect on clinical outcome before discharge from ED and hospital .At ED discharge, the clinical outcomes were shock and none shock .The probability of shock was 3.732 times greater)95 %Cl, .964-14.456; *p*=0.013 (in the patients who did not receive on scene care)CPR (when compare to the patients who received on scene care)CPR.(The patients who had ISS higher than 50 were more likely to develop shock 3.757 times greater than patients who had ISS lower than 50) 95 % Cl, 1.361-10.370; *p* = 0.011 . (Both independent variables: on scene care and severity of injury can predict the clinical outcomes at ED discharge 4.8 .%

The final outcome before hospital discharge was rated into 3 categories : 1 (discharged with at least one organ remained dysfunction, 2 (permanent disability 3 (death . When holding the other predictors as constant, on scene care : the expected odd of death before hospital discharge was 6.5 times greater among those patients who did not receive on scene care) CPR (than those who received on scene care) CPR( ) 95 % Cl, 1.338-31.500; *p*=0.020.(Severity of injury)ISS 25-49:(the expected odd of death before hospital discharge was 4.5 times greater among those patients who had ISS score from 25 to 49 than those who had ISS score less than 25)95 %Cl, 2.818-7.272; *p*=0.000.(Severity of injury)ISS >50:(the

expected odd of death before hospital discharge was 21.6 times greater among those patients who had ISS score >50 than those who had ISS score less than 50)95 % CI, 6.462-72.024; *p*=0.000.(Age :for each one year increased in age, there was 1 time increase of odd of death before hospital discharge)95 % CI, 1.007-1.030; *p*= 0.002.(Types of insurance :the patients who did not had motor compulsory insurance had 2 times of odd to be death before hospital discharge than those who had motor compulsory insurance)95 % CI, 1.323-2.918; *p*=0.001.(MSI <0.7 or >1.3: the patients who still had shock at ED discharge had 2.3 times of odd to be death before hospital discharge than those who was recover from shock at ED discharge)95 %CI, 1.545-3.408; *p*=0.000.(Five variables :on scene care, severity of injuries, age, types of insurance, and, MSI at ED discharge can be predicting the clinical outcomes of trauma patients before hospital discharge 25.6.%

(g) Future Areas to Take Note of, and Going Forward

1) This preliminary investigation worked in only Bangkok metropolitan region. Then the further study can repeat testing in other setting in Thailand to strengthen the model and expand the degree of generalizability.

2) Finding showed the only relationship about independent and dependent variable but now we did not know about the causality then path analysis or causal analysis should be conduct to confirm and predict phenomena of clinical outcome.

3) On scene care, this variable can predict the outcome both at ED discharge and before hospital discharge. Then the program to promote the knowledge for bystanders to help the patient on scene before transfer to the hospital should be developed and tested for its effectiveness.

(h) Means of Official Announcement of Research Results: Journal of Emergency Nursing, or Pacific Rim International Journal of Nursing Research