



อุบัติเหตุจราจรในภาคเหนือของประเทศไทย ปี 2554-2556: การศึกษาภาคตัดขวาง

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บทคัดย่อ

ประเทศไทยยังคงเผชิญกับปัญหาอุบัติเหตุจราจรและส่งผลต่อการใช้ทรัพยากรทางการแพทย์และสาธารณสุขจำนวนมากในแต่ละปี การศึกษาภาคตัดขวางเพื่ออธิบายลักษณะการเกิดอุบัติเหตุจราจรในภาคเหนือประเทศไทย ช่วงปี พ.ศ. 2554-2556 กลุ่มตัวอย่างคัดเลือกจาก 8 โรงพยาบาล และ 7 สถานีตำรวจ ในภาคเหนือประเทศไทย โดยรวบรวมข้อมูลทางด้านอายุ เพศ ศาสนา สถานภาพครอบครัว ปีและช่วงเวลาที่ได้รับอุบัติเหตุ ชนิดของยานพาหนะ การดื่มเครื่องดื่มแอลกอฮอล์ การได้รับการรักษาที่โรงพยาบาล ค่าใช้จ่ายทางการแพทย์ ผลการรักษา และพื้นที่เกิดอุบัติเหตุทั้งหมด 35,925 ราย ผู้ได้รับอุบัติเหตุในช่วงปี พ.ศ. 2554 ถึง 2556 จาก 8 โรงพยาบาล กลุ่มตัวอย่างมีอายุเฉลี่ย 16-25 ปี (ร้อยละ 28) และอายุ 26-35 ปี (ร้อยละ 17.4) ช่วงที่เกิดอุบัติเหตุสูงสุดมี 2 ช่วง คือ ช่วงเดือน ธันวาคม ถึงเดือน มกราคม (ร้อยละ 32.8) และช่วงเดือน เมษายน ถึงเดือน พฤษภาคม (ร้อยละ 36.7) ยานพาหนะหลักที่เกิดอุบัติเหตุคือ จักรยานยนต์ (ร้อยละ 78.9) และรถยนต์และรถบรรทุก (ร้อยละ 21.1) ร้อยละ 29.3 ของกลุ่มตัวอย่างเคยได้รับการเข้ารับการรักษาในโรงพยาบาล ในกลุ่มดังกล่าว ร้อยละ 82.3 ได้นอนรักษาในโรงพยาบาลต่ำกว่า 7 วัน ร้อยละ 82.0 มีค่ารักษาพยาบาลน้อยกว่า 5,000 บาท ข้อมูลจากสถานีตำรวจ พบว่า มีจำนวน 2,339 ราย ที่สามารถทำการวิเคราะห์ได้ ร้อยละ 71.4 เป็นชาย ร้อยละ 27.6 มีอายุ 16-25 ปี ร้อยละ 60.9 มีสถานภาพสมรสแต่งงานแล้ว ร้อยละ 92.0 นับถือศาสนาพุทธ ยานพาหนะหลักที่ได้รับอุบัติเหตุคือ รถยนต์ (ร้อยละ 56.6) ร้อยละ 67.3 ได้รับอุบัติเหตุบนถนนสายหลัก ร้อยละ 60.7 ได้รับอุบัติเหตุในช่วงกลางวัน (06.00 น. - 18.00 น.) ร้อยละ 13.1 ขับรถขณะมีเมามา ประเทศไทยไม่มีระบบข้อมูลข่าวสารที่เชื่อมต่อกันระหว่างฐานข้อมูลของโรงพยาบาลและสถานีตำรวจ ประเทศไทยมีความจำเป็นต้องพัฒนาโครงการส่งเสริมสุขภาพที่มีประสิทธิภาพเพื่อลดอัตราการเกิดอุบัติเหตุทางจราจร โดยเฉพาะในกลุ่มเยาวชน (อายุ 16-25 ปี)

คำสำคัญ: ระบาดวิทยา อุบัติเหตุจราจร ภาคเหนือประเทศไทย

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Traffic injury in northern Thailand in 2011-2013: A cross sectional survey

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Abstract

Thailand has been facing traffic injuries problem leads to spending large amounts of money on medical and public health resources every year. A cross-sectional study design aimed to explain the characteristics of traffic injury in northern Thailand during 2011-2013. Subjects were recruited from 8 hospitals and 7 police stations from northern Thailand. Data regarding to age, sex, religion, marital status, year of getting injury, time of getting injury, type of vehicles, alcohol used, hospital admission, medical cost, treatment outcomes, and favorite areas of injury occurrences were collected. Totally 35,925 cases were reported between 2011 and 2013 from eight hospitals in northern Thailand. The majority age was 16-25 years old (28.0%), followed by 26-35 years old (17.4%). The peak period of traffic injuries occurred in two episodes; December to January (32.8%), and April to May (36.7%). The major vehicle was motorcycle (78.9%), and followed by car and truck (21.1%). 29.3% had been admitted in a hospital, and 82.3% were admitted at a hospital less than 7 days, and 82.0% were having a medical cost \leq 5,000 baht. Regarding data from seven police stations: 2,339 cases were collected for the analysis. 71.4% were males, 27.6% were aged 16-25 years old, 60.9% were married, 92.0% were Buddhists. The main type of vehicle was a car (56.6%), 67.3% had their injury on the highways, 60.7% had injury during the daytime (06.00 am.-06.00 pm.), and 13.1% drank alcohol. There was no information linking system between a hospital and a police station. Thailand needs effective and specific health promoting programs for reducing the traffic accident particularly in young adults (16-25 years old) populations.

Keywords: epidemiology, traffic injury, northern Thailand

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■ Introduction

Traffic injury is one of the most significant causes of death worldwide. Due to advance technology of vehicle engineering, a lot of number of vehicles on the limited spaces of road together with unsafe-driving behaviors of road users lead to various episodes of traffic injuries in each year particularly in developing countries. These injuries and deaths have an immeasurable impact on the families affected, whose lives are often changed irrevocably by these tragedies, and on the communities in which these people lived and worked. Approximately 1.24 million people were killed from traffic injury, and tens of millions of people were injured or disabled in every year. World Health Organization reported that only 28 countries, covering 7.0% of the world's population, have comprehensive road safety laws on five key risk factors: drinking and driving, speeding, and failing to use motorcycle helmets, seat-belts, and child restraints.¹

In 2013, World Health Organization reported that the most affected group was young adults aged between 15 and 44 years which accounted for 59.0%² of global road traffic deaths, and 92.0%² of road traffic deaths occurred in low- and middle-income countries. Pedestrians, cyclists, and riders of motorized two-wheelers and their passengers were a major group of vulnerable road users. Drinking driving and speeding were the main causes of road traffic injuries. Only 59 countries (39.0% of world population) have implemented an urban speed limit of 50 km/h or less and allow local authorities to reduce these limits and only 89 countries have a comprehensive drink-driving law enforcing the WHO-recommended blood alcohol concentration limit of 0.05 g/dl or less including Thailand.²

Thailand had planned to reduce traffic injury between 2010 and 2014, aimed less than 10/100,000 population.³ In 2010,³ there were 28,484,2829 registered vehicles, 9,887,706 cars and four wheels light vehicles, 17,322,538 motorized 2- and 3-wheelers which dramatically increase of numbers of various vehicles. In the same year (2010) of 13,776 deaths from traffic injuries were reported: 79.0% were males, and 21.0% were females, and approximately 3.0% GDP lost due to road traffic crashes. The trend of traffic death in Thailand has showed stable rate in above 18/100,000 population since 2000 to 2013. This indicates that Thai people are facing a serious health problem which is caused by daily traffic use.

Traffic injury is the main problem for the Thai people in the 21st century. A number of deaths have been reported in each year from the traffic injuries particularly in the famous culture festivals such as the festival of New Year and Songkran festival.⁴ A huge number of cars and motorcycle users in the tourist destinations in Thailand are also a factor that related to the occurrence of traffic injuries.

Northern parts of Thailand such as Chiang Rai, Chiang Mai, and Pha Yao are famous tourist destinations. There are many tourist attractive places for visitors to visit in these areas, and having a high rate of traffic accident⁵. However, the main road for visiting there is very difficult particularly for those who are first time visitors to these areas due to seasoning and geographic reasons. Moreover, there is little documentation regarding the characteristics of traffic injury in northern Thailand including the risk population of the traffic accident in northern Thailand. Therefore, this study aimed to elucidate the picture of

traffic injuries particularly in areas with high rate of traffic injury report in northern Thailand by using the information from two different organizations; hospitals and police statement which had been recorded between 2011-2013.

■ Materials and Methods

Study design

A cross-sectional study design was carried out for elucidation of the situation of traffic injuries in northern Thailand between 2011 and 2013 to explain the epidemiology of traffic injury. Data were collected by the validated questionnaires from eight selected hospitals and seven selected police stations from Chiang Rai, Chiang Mai, and Pha Yao provinces, Thailand.

Study sites

The study were conducted in 3 provinces; Chiang Rai, Chiang Mai, and Pha Yao. Study sites were selected by using the first three ranks of traffic injuries reported in 2010 as baseline information from these provinces. At the beginning, we planed to collect data from 3 hospitals and 3 police stations in each province. However, there were only 8 hospitals participated into the study; 3 hospitals from Chiang Rai province: Phan, Mae Suai, and Mae Sai hospitals; 3 hospitals from Pha Yao province: Mae Jai, Dok Kam Tai, and Chiang Kam hospitals; and 2 hospitals from Chiang Mai province: Na Korn Pin and Son Pa Tong Hospitals. After sending the invitation, one hospital from Chiang Mai province did not participate the project.

Seven police stations participated into the study; 3 police stations from Pa Yao province: Mae Chai, Dok Kham Tai, and Chiang Kham police stations; 2 police stations from Chiang Rai

province: Phan and Mae Suai police stations; and 2 police stations from Chiang Mai province: Na Korn Ping and San Pha Tong police stations. After sending the invitation, one police station in Chiang Rai province and another police station in Chiang Mai province did not participate the project. One police station from Chiang Rai province, and another one police station from Chiang Mai province did not participate the project.

Study population

The study populations were the people who got the traffic injury from the highest report of number of traffic injury areas in Chiang Rai, Chiang Mai, and Pha Yao provinces, northern Thailand, during 2011-2013.

Eligible population

The eligible populations were the people who got traffic injury and/or received medical care at the hospitals in Chiang Rai, Chiang Mai, and Pha Yao provinces, with complete medical records and police statements, between 2011 and 2013.

Study sample and sample size estimation

The data were collected from the secondary source of information from the hospitals and police stations. All the subjects of traffic injuries in 8 hospitals and 7 police stations between 2011-2013 with complete information were recorded and put into the analysis.

Research instruments

Questionnaires had been developed for collecting data from the hospitals and police stations. The questionnaire for collecting data from the hospitals had been divided into two parts: a) a 6-item form for general information;

age, sex, address, religion, marital status, and occupation; b) a-12 item form for traffic injury information; type of vehicle, place of having traffic injury, alcohol use, time of access health sector, length of hospitalization, organ of problem, number of people who had traffic injury, how many of those who had visited hospital, number of death, date and time of having traffic injury, characteristic of disability, organ affected, direct cost of treatment, having of traffic insurance.

Questionnaire for collecting data from the police stations had 2 parts; a) a-6 item form for collecting general information; age, address, sex, religion, marital status, and occupation; b) a-9 item form for collecting data from the police station: type of vehicles, place of having traffic injury, alcohol use, level of property damage, total number of having traffic injury in the same time, number of severe cases with hospitalize and number of those that did not need access to health care service, number of death, date, place and time of having traffic injury, having traffic injuries insurance, and being fault or truth of that injury in terms of the traffic laws and regulations.

All questionnaires had been detected in validity by using the Item Objective Congruence Index (IOC) technique; the three external experts had been invited and gave comments and score in each item of the questionnaire. The score was given in -1 for improper question, 0 for needs to develop before use, and 1 means a good question. In total, if any question had a total score > 0.5 had been cut off, if 0.5-0.7 had been corrected before use, and if the question had a score ≥ 0.7 was selected into the questionnaires. Questionnaires also had piloted with 20 cases at Mae Chan hospital and Mae Chan Police Station, Chiang Rai

province before use with the main purpose to ensure cover all aspects of information required.

Data collection procedures

The collecting information form was developed after literature review. The forms were validated by three external experts and researchers did a pilot test at Mae Chan hospital. The systematic reviewing process had been tested in Mae Chan Hospital and Mae Chan Police Station before the project commenced.

Permission for accessing information had been granted by the director of the hospital and the chief of police station. The researchers made appointment with the staff at the targeted hospitals and police stations through an official letter from the researchers two weeks in advance before visiting them. Before collecting data, all the details of the research project including the research objective had been provided for the local staff. The main source of information in the hospital was the OPD cards, meanwhile the main source of information in the police stations was the daily police statements.

In the hospital settings, after getting the permission from the director, all the information of patients who had been diagnosed by traffic injuries according to ICD-10 (version 2010) from 1 January 2011-31 December 2013 had been sorted. The OPD cards and other medical records had been investigated for collection of all relevant information.

In the police station settings, the daily statements of the police station were investigated to seek all information of the traffic injuries from 1 January 2011-31 December 2013. The necessary data were recorded and analysis.

In the final step, the Thai National Identification Card Number was used to link the information of victims from two different sources of information for explaining their characteristics. All data had been collected during 1 June 2014-December 2014 by two trained research assistants.

Statistical analysis

Data were double-entered and validated using Microsoft Excel. Data analysis was carried out by using SPSS version 20, 2014 (SPSS, Chicago, IL), STATA version 8.2 (Stata Corp, College Station, TX), and Epi-Info version 6.04d (US Centers for Disease Control and Prevention, Atlanta, GA).

Descriptive statistics (means, standard deviation, frequency, and percentage) was used to describe the general characteristics of the subjects.

Chi-square test was used for testing the difference in interested variables.

Ethical consideration

This study was approved by the Ethics in Human Research Committee of Mae Fah Luang University (REH-55022). A permission of collecting data in 8 hospitals was granted by the Chief of Provincial Public Health Office and director of hospitals, while the permission for data collecting in the police stations had been supported by the Chief of Police Station at each police station.

■ Results

Results from the eight hospitals

Totally 35,925 cases had been collected into the analysis from 8 hospitals during 2011-2013. Chiang Mai Province (48.9%) had the highest case report followed by Pha Yao (38.7%) and Chiang Rai Provinces (12.4%) respectively. Na Korn Ping Hospital had the highest case reported with 34.6%

followed by Chiang Kham and Dok Kham Tai hospitals with 17.8% and 17.5% respectively. The highest case report was in the year of 2013 (37.9%), followed by 2012 (36.9%) and 2011 (25.2%). Most of the cases of traffic injury were males (66.6%). The majority age was 16-25 years old (28.0%), followed by 26-35 years old (17.4%). The peak period of traffic injuries occurred in two episodes; December to January (32.8%), and April to May (36.7%). The major vehicle was motorcycle (78.9%), followed by car and truck (21.1%) (Table 1).

Of 10,533 cases (29.3%) had been admitted in a hospital, and 82.3% were admitted at a hospital less than 7 days, and 82.0% were having a medical cost \leq 5,000 baht. Totally 4,023 cases had an operation due to traffic injury, and among those 78.1% were males, 21.9% were females. 13.1% of males, and 10.9% of females had an operation. According to permanent loosen the physical ability after getting traffic injury, 1.4% had a prolong consequence disability (Table 1). All the cases that required operation were sent to tertiary hospitals, but there was no medical operation, and also orthopedists were not available. Among those admitted in a hospital, 321 cases (3.1%) were reported dead at the end of treatment.

Five variables indicated a statistical difference between sex: alcohol use, type of vehicles, length of hospital admission, medical cost, and having medical surgery. Males had a greater proportion of alcohol use during driving than females (p -value <0.001). Males had a greater proportion of use of motorcycle than females (p -value <0.001). Males had a longer hospital admission than females (p -value <0.001), and males had used a greater cost of medical treatment than females (Table 2).

Table 1 Subjects' characteristics from eight hospitals, 2011-2013

Characteristics	n	%	Characteristics	n	%
Total	35,925	100.0	Total	35,925	100.0
Province			Type of vehicles		
Chiang Rai	4,467	12.4	Car and Truck	7,596	21.1
Chiang Mai	17,572	48.9	Motorcycle	28,329	78.9
Pha Yao	13,886	38.7	Hospital admission		
Hospital			Yes	10,533	29.3
Mae Chai	1,232	3.4	No	25,392	70.7
Dok Kham Tai	6,269	17.5	Length of admission (days)		
Chiang Kham	6,385	17.8	≤ 7	6,698	82.3
Phan	489	1.4	8 - 14	1,048	12.9
Mae Suai	733	2.1	≥ 15	390	4.8
Mae Sai	3,245	9.0	Medical cost (baht)		
Na Korn Ping	12,425	34.6	≤ 5,000	29,473	82.0
San Pha Tong	5,147	14.3	5,001 - 10,000	2,157	6.0
Year of report			10,001 - 50,000	3,673	10.2
2011	9,046	25.2	≥ 50,001	622	1.7
2012	13,241	36.9	Having prolong disability		
2013	13,638	37.9	Yes	489	1.4
Sex			No	6,385	17.8
Male	23,919	66.6	Unknown	29,051	80.9
Female	12,006	33.4	Alcohol used		
Age (years old)			Yes	861	2.4
≤ 15	4,671	13.0	No	7,857	21.9
16 - 25	10,066	28.0	Unknown	2,720	75.7
26 - 35	6,239	17.4			
36 - 45	5,221	14.5			
46 - 55	5,221	14.5			
≥ 56	4,507	12.6			

Table 2 Comparison of subjects' characteristics by sex

Characteristics	Male	Female	χ^2	p-value
Alcohol use				
Yes	670	191	103.228	<0.001*
No	4,722	3,135		
Types of vehicle				
Car	4,564	3,032	182.688	<0.001*
Motorcycle	19,355	8,974		
Length of hospital admission (day)				
≤ 3	2,913	1,037	326.984	<0.001*
4 - 7	1,554	485		
8 - 15	833	271		
16 - 30	321	91		
≥ 31	17,783	9,901		
Unknown	515	221		
Medical cost (baht)				
≤ 5,000	18,467	10,248	347.983	<0.001*
5,001 - 10,000	1,572	585		
10,001 - 50,000	2,867	806		
≥ 50,001	474	148		
Medical surgery				
Yes	3,142	883		
No	13,562	659		
Unknown	7,215	6,591	210.880	<0.001*

* Significant level at alpha = 0.05

Results from seven police stations

Regarding data from seven police stations: 2,339 cases had been collected into the analysis. Chiang Rai Province was the highest traffic injury case report area followed by Chiang Mai Province. Characteristics of subjects: 71.4% were males, 27.6% were aged 16-25 years old, 60.9% were married, 92.0% were Buddhists. The number of

traffic injuries tend to have increased from 2011-2013. The main type of vehicle was a car (56.6%), 67.3% had their injury on the highways, 60.7% had injury during the daytime (06.00 am.-06.00 pm.), and 13.1% drank alcohol. Results indicated specific areas where traffic injuries mostly occur in each district, steep hill ascent with winding road (Table 3).

Table 3 Subjects' characteristics from seven police stations, 2011-2013

Characteristics	n	%	Characteristics	n	%
Total	2,339	100.0	Total	2,339	100.0
Province			Marries status		
Chiang Rai	1,392	59.5	Single	727	31.1
Chiang Mai	343	14.7	Married	1,426	60.9
Pha Yao	604	25.8	Unknown	186	8.0
Police station			Religion		
Mae Chai	272	11.6	Buddhism	2,129	92.0
Dok Kham Tai	105	4.5	Christ	39	1.7
Chiang Kham	227	9.7	Unknown	171	7.3
Phan	1,225	52.4	Year		
Mae Suai	167	7.2	2011	676	28.9
Na Korn Ping	161	6.9	2012	753	32.2
San Pha Tong	182	7.8	2013	910	38.9
Sex			Types of vehicle		
Male	1,671	71.4	Car	1,324	56.6
Female	668	28.6	Motorcycle	1,015	43.4
Age (years old)			Alcohol used		
≤ 15	248	10.6	Yes	307	13.1
16 - 25	646	27.6	No	2,032	86.6
26 - 35	404	17.3	Location of accident		
36 - 45	385	16.5	Highway	1,574	67.3
46 - 55	355	15.2	Village road	765	32.7
≥ 56	301	12.9	Time		
			06.00-18.00	1,419	60.7
			18.00-06.00	920	39.3

Two variables showed a statistical difference between sex who had a traffic injury: age and alcohol use. Males had a greater proportion of alcohol use while driving than

females (p-value<0.001), and compared to younger females, younger males had more traffic injuries (p-value<0.001) (Table 4).

Table 4 Comparison of having a medical history by sex

Characteristics	Male	Female	χ^2	p-value
Total	1,671	668		
Age (years old)				
≤ 15	145	103	24.89	<0.001*
16 - 25	470	176		
26 - 35	306	98		
36 - 45	277	108		
46 - 55	257	98		
≥ 56	216	85		
Alcohol used				
Yes	252	55	19.62	<0.001*
No	1,419	613		

* Significant level at alpha = 0.05

Comparison traffic of injury between hospitals' records and police station's records

After sorting data by the Thai National Identification Number, only 537 cases (1.5%) were found to be recorded in both a hospital and a police station simultaneously. Another of 98.5% lost way of linking information between hospital and police statement sources of information. Of 97.2% of case reports from the police stations had a sever traffic injury and either life or property damaged. Regarding property damage, 38.2% were reported in public property damages.

On the other hand, most of the cases reported from a hospital found physical damages. Severe cases had been reported in the evening particularly during Thai festive period (April).

There were no specific information linked system between a hospital and a police station.

■ Discussion

The study found that a few proportion of the reports on traffic injuries between the hospitals' records and the statement from the police stations coincided. This reflects that the accuracy of the information of traffic injury in Thailand may need to improve in order to a good database to present to for the country as a whole. However, the typical objective of the reports from two different sources of information is different. The main purpose of medical records are based on the clients who need help in medical care, whereas the purpose of the statement of the

police station is to provide the information regarding the abusing of traffic laws and regulations. Moreover, Thailand do not have the linkage system of these sources of information. Yung-Ching et al⁶ reported that the source of information of road traffic injury from the traffic insurance companies could support for getting an accurate outcome for sorting the information.

The specific characteristics of the roads in northern Thailand are very much different from place-to-place and time-to-time in Thailand. The study of Guangnan et al⁷ reported that road and environmental factors were the main contributing factors to traffic injury in China, and these two factors also were found as a factor affecting severity of injuries. Saffet et al⁸ reported that the geographical information system (GIS) could be used as a tool for visualization of injury and reduce a traffic injury system particularly in the difficult geographic areas. The study of Alain et al.⁹ reported that the full distribution traffic information system which is based on vehicle-to-vehicle wireless data transmission could reduce traffic jam and incident particularly in the difficult geographical areas. Most of the areas in northern Thailand are composed of geographical difficult that can lead to traffic accident particularly in high season of tourist visit which coincided with study of Kipsaina.¹⁰

Most traffic injuries in Thailand occurred in the community roads. This may be because of lack of awareness of road use including non-use of safety equipment. Our study coincided with the study of Jian et al.¹¹ which reported that most traffic injuries in Singapore occurred in the transition and highways zones.

Being male had a greater chance to get traffic injury than being female, and also being subjects aged 16-25 years old had a greater chance

to get traffic injury than other groups of people. Guangnan et al.⁷, Cintia et al.¹², and Immaculada et al.¹³ reported that the most vulnerable population for getting road traffic injury was young male. However, Reza et al.¹⁴ reported that age was not associated with traffic injury involving motorcyclists, but strongly associated with type of vehicles and sex. Our study coincided with the study of Barbosa et al.¹⁵ found that most of the traffic victims were motorcycle users and with average of 2 days for hospital admission. However, Guangnan et al.⁷ reported that age was not associated with traffic injury but education and economic status were found as a factor related to road traffic injury. Regarding the outcomes of traffic injury, there was a wide range of treatment outcomes from complete recovery to permanent loss of physical movement. This findings coincide with the study of Nisakorn et al.¹⁶

Motorcycle users were the main population who had gotten traffic injury. Tor-Olav et al.¹⁷ reported that type of vehicles, type of drives, and also safety culture were the good predictors for getting traffic injury in Norway. Our study also coincided with the study of Vatanavongs et al.¹⁸ which shown that the most time period of traffic injuries in Thailand occurred in some festivals, and the speed was the major factor influencing the severity of crashes.

The proportion of alcohol used during road use had a great difference between the report form hospital records (2.4%) and police statements (13.1%). However, alcohol use during driving is strictly prohibited in Thai law, therefore, the information might have been underreported. Many studies¹⁹⁻²⁴ reported that use of alcohol was the major risk factor of traffic injury. Also in a case-control study among alcohol users and traffic injury²⁵ in Thailand it was found that those

having high concentration of alcohol in blood had a greater risk for having traffic injury.

■ Conclusion

Thailand still has a high traffic injury report particularly in the northern region which has many tourist destinations. Motorcycle is the main vehicle of having traffic injury and favor to happen in the community road. The susceptible host of getting traffic injury in Thailand is male and aged 16-25 years old. Male has a greater proportion to use alcohol and use more motorcycle as their vehicle. This indicated that we need an urgent and continuous health promotion program to reduce the traffic injury which is focused particularly on this susceptible group of people. Having a suitable health promotion program also can directly reduce the medical cost and life

lost. We also need to provide some other channels to increase their awareness on accident and limited the speed in particularly young males to reduce the number of traffic injuries. Alcohol use is one important factor effecting traffic injury among young men, therefore, many relevant government agencies who response on forcing related laws to be effective would be one another method to reduce the numbers of traffic injuries.

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