

An Epidemiology of traffic accident in northern Thailand

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Summary: A cross-section study design aimed to explain the characteristics of traffic accident cases in northern of Thailand. The subjects were recruited from the highest case accident areas from hospitals and police stations in Chiang Rai, Chiang Mai, and Pha Yao Provinces, during 2009-2012. Eight hospitals and 7 police stations had been selected into the study by purposive sampling technique. All medical records and police statements were used as the sources of data collection by the completed and tested questionnaires: age, sex, religion, marital status, year of accident, time of accident, types of vehicle, alcohol used, hospital admission, medical cost, treatment outcome, and favorite areas of accident occurrences. All research procedures were approved by the committee for the protection of human subjects of Mae Fah Luang university (REH-55022). **Conclusion;** Main subjects were males, and aged between 16-25 years old. Most of the accident cases had been cared at the hospitals, but some of those did not record on the police statements. Most of subjects from the police statements were got accident by cars, however, subjects mainly who receiving medical care had an accident by motorcycles. The proportion of alcohol used from hospitals had a little bit different from police statements; it might be caused by of Thai's laws. A great proportion of subjects had unknown status on their treatment outcomes. 10.22% of subjects had been reported on 10,001-50,000 baht of medical costs. Most of accident had occurred on the highways, and on the day time.

Aim of Research This research aim was to investigate the epidemiology of traffic accident in northern Thailand.

Method of Research

A cross-sectional study design was applied to explain the characteristics of the accidents in three provinces, northern Thailand: Chiang Rai, Chiang Mai, Pha Yao Provinces. The districts which found the highest accident cases during 2009-2011 were selected into the study by purposive sampling technique. The information from 8 hospitals and 7 police stations were collected and analyzed. The medical records and police statements regarding to the occurrences of the accidents between 2009 and 2011 were used as the sources of research information. The standard questionnaires had been developed and tested reliability and validity before used. The questions composed of types of vehicle, place (geographic conditions), person (age, sex, religion, and marital status), time of accident, severity of diseases, alcohol used, length of hospital admission, and costs and the outcomes of medical care.

The study populations were the people who got the accident in the highest number of accident areas in Chiang Rai, Chiang Mai, and Pha Yao Provinces, northern Thailand, during 2009-2011. There were 3 districts from Chiang Rai Province (Phan, Mae Sai, and Mae Suai Districts), 2 districts from Chiang Mai Province (Na Korn Pin, and San Pha Tong Districts), and another 3 districts from Pha Yao Provinces (Mae Jai, Dok Kam Tai, and Chiang Kam Districts) where the selected areas of the study.

The eligible populations were the people who got the accident and/or received the medical care at the hospitals in Chiang Rai, Chiang Mai, and Pha Yao Provinces with found the completeness of their

medical record and police statements, between 2009 and 2011. The descriptive and inferential statistics were used for explanation and testing the hypothesis at the alpha= 0.05. All the research protocols had been approved by the committee for the protection of human subjects of Mae Fah Luang before commences (REH-55022).

Results of Research

Table 1 Characteristics of case accidents in 8 hospitals during 2009-2011.

Characteristics	n	%	Characteristics	n	%
Total	35,925	100.00	Sex		
Provinces			Male	23,919	66.58
Chiang Rai	4,467	12.43	Female	12,006	33.41
Chiang Mai	17,572	48.91	Type of vehicle		
Pha Yao	13,886	38.65	Car	21,114	7,596
Districts			Motorcycle	78.85	28,329
Mae Jai	1,232	3.42	Hospital admission		
Dok Kam Tai	6,269	17.45	Yes	10,533	29.31
Chiang Kam	6,385	17.77	No	25,392	70.68
Phan	489	1.36	Length of hospital admission (day)		
Mae Suai	733	2.04	≥ 7	6,698	82.32
Mae Sai	3,245	9.03	8-14	1,048	12.88
Na Korn Ping	12,425	34.58	≤ 15	390	4.79
San Pha Tong	5,147	14.32	Medical cost (baht)		
Years			≥ 5,000	29,473	84.81
2009	9,046	25.18	5,001 – 10,000	2,157	6.00
2010	13,241	36.85	10,001 – 50,000	3,673	10.22
2011	13,638	37.96	≤ 50,001	622	1.73
Age (year)			Disability		
≥ 15	4,671	13.00	Yes	489	1.36
16 – 25	10,066	28.01	No	6,385	17.77
26 – 35	6,239	17.36	Unknown	29,051	80.86
36 – 45	5,221	14.53	Alcohol use		
46 - 55	5,221	14.53	Yes	861	2.39
≤ 56	4,507	12.54	No	7,857	21.87
			Unknown	27,207	75.73

Table 2 Comparison of the subjects' history by sex

Characteristics	Male	Female	χ^2	p-value
Total	5,392	3,326		
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		

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	344	112		
Unknown	150	36		
Medical surgery				
Yes	3,142	883	210.880	≤0.001*
No	13,562	6,59		

**Significant at alpha =0.05*

Table 3 Characteristics of case accidents in 7 police stations during 2009-2011

Characteristics	n	%	Characteristics	n	%
Total	2,339	100.00	Marries status		
Province			Single	727	31.08
Chiang Rai	1,392	59.51	Married	1,426	60.96
Chiang Mai	343	14.66	Unknown	186	7.95
Pha Yao	604	25.82	Religion		
District			Buddhism	2,129	92.02
Junn	272	11.62	Christian	39	1.66
Dok Kom Tai	105	4.48	Unknown	171	7.31
Pon	227	9.70	Year		
Phan	1,225	52.37	2009	676	28.90
Mae Suai	167	7.13	2010	753	32.19
Na Korn Ping	161	6.88	2011	910	38.90
San Pha Tong	182	7.78	Types of vehicle		
Sex			Car	1,324	56.60
Male	1,671	71.43	Motorcycle	1,015	43.39
Female	668	28.55	Alcohol use		
Age (year)			Yes	307	13.12
≥ 15	248	10.60	No	2,032	86.87
16 – 25	646	27.61	Area		
26 – 35	404	17.27	Highway	1,574	67.29
36 – 45	385	16.46	Community	765	32.70
46 - 55	355	15.17	Time of accidents		
≤ 56	301	12.86	06.00 am.-06.00pm.	1,419	60.66
			06.00 pm.-06.00am.	920	39.33

Table 4 Comparisons of subjects' characteristics by sex

Characteristics	Male (1,671)	Female (668)	χ^2	p-value
Province				
Chiang Rai	926	466	43.55	≤0.001*
Chiang Mai	281	63		
Pha Yao	464	140		

Time of the occurrence of accident				
06.00-18.00	962	457	23.51	≤0.001*
18.00-06.00	709	211		
Age (year)				
≥ 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 use				
Yes	252	55	19.62	≤0.001*
No	1419	613		

*** Significant at alpha =0.05**

Results of the study

Totally 35,925 cases had been recruited into the study from 8 hospitals during 2009-2011. The highest case had been reported from Chiang Mai followed by Pha Yao and Chiang Rai Provinces respectively. The number of accidents was trend to increase during 2009-2011. Most of the cases accidents were female (66.58%), aged 16-25 years old (28.01%). Main of vehicle was motorcycle (78.85%). 29.31% of subjects had been admitted at the hospital with 77.06% had a length of admission ≤31 days. 84.81% had paid for medical cost with ≥5,000 baht, however, 10.22% had 10,001-50,000 baht. A small proportion of hospital admission cases had been found the disability (2.39%), and 2.39% drank alcohol. However, 80.86% could not identify their used of alcohol and 75.73% unknown of disability status. Univariate analysis model found that alcohol used, types of vehicle, medical cost, and medical surgery were statistical different between sex.

Regarding to the 7 police statements, 2,339 cases had been recruited into the analysis. Chiang Rai Province was the highest reported number of accident cases following by Chiang Mai Province. 71.43% were females, 27.61% were aged 16-25 years old, 60.96% were married, 92.02% were Buddhism. The number of accident cases had trended to increases during 2009-2011. The main type of vehicle was the cars (56.60%), 67.29% had their accident on the highways, and 60.66% had accidents on the day time (06.00 am.-06.00pm.), and those 13.12% drank alcohol. Univariate analysis model found that the number of case according to place, time, age, and alcohol used were found statistical different between sex.

Future Areas to Take Note of, and Going Forward:

The researchers will try to develop the model for reducing the risk behaviors of traffic accidents among the youth 16-25 year olds) in the particular community. If the outcome is found best to fit the problem will extend to other communities.

Means of Official Announcement of Research Results: The official report will be sent to the Ministry of Public Health and The Thai health promotion Foundation for using to development their own policy to reduce the number of accidents. The research results will also be presented on the Asia Pacific Academic Consortium for Public Health 2013, and will be published on the Asia Journal of Public Health shortly.