

## Traffic Injury Correlated to Alcohol Drinking in the Upper Northern Region of Thailand

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**Abstract:** This research study used a cross-sectional prospective methods. The sample groups consisted of patients who suffered from traffic injuries and who were seeking health care services in different hospitals. The data were collected and analyzed using descriptive statistics of Chi-square and Logistic Regression. The results of this study showed that 84.7% of patients suffered from traffic injuries as follow: motorbikes (84.8%); self-occurrence (56.5%) and negligence (59.7%). Traffic injury has been found to be significantly related to alcohol drinking ( $p = 0.001$ ). People who were drinking alcohol were 3.4 times exposed to traffic injuries more than those who did not drink alcohol; impetuous 28.57 times> non-impetuous; drowsy 30.30 times> non-drowsy; negligent 200 times> non-negligent and those with poor vision 250 times> those with normal vision.

**Key words:** Health implication, alcohol consumption, traffic injury, cross sectional method, drowsy

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### INTRODUCTION

In the year 2000, Thais consumed alcohol to the amount of 13.59 L/person. By considering each type of alcohol, it was found out that Thais consume beer for an average of 1.12 L/person which ranked Thailand 58th country of alcohol drinkers in the world.

Thais consumed wine for an average amount of 0.01 L/person/year and this ranked Thailand the 111th in the world and Thais consumed spirits for an average amount of 12.45 L/person/year which ranked Thailand the 3rd in the world. It is clear from the statistics that Thais consume spirit at an enormous amount which ranks Thailand among the top-five alcohol drinkers worldwide during the past 3 years.

It can be foreseen that alcohol will give rise to greater risks of traffic injuries since high blood alcohol can bring about acute Central Nervous System (CNS) depression which can lead to the injury or otherwise aggressive behavior or suicidal ideas (Rehm *et al.*, 2003).

Ussanangkornchai stated that the situation of alcohol consumption in Thailand from the macro perspective indicates that young drinkers have a decreased life expectancy. Male youth drinks alcohol for the first time at the age of 15, while females drink at the age of 20. Furthermore, some of them use drugs along with alcohol. Serious consequences such as: health problems, illness, injuries, fighting and unsafe sexual activity can be found.

Thailand has a considerable number of deaths caused by road injuries that ranks it to be number 6 in the World. This figure usually increases 2-3 times during long holidays. If steps towards an effective solution are not taken, there is a possibility that within 5 years> that 30,000 Thai people will lose their life due to road injuries every year, where by motorcycles are the most likely vehicle to bring about such a great loss in human life because they are the most popular vehicles used in both the urban and rural areas. The results of in-depth study regarding injury relating to motorcycle at the incident site shows that causes of injury are mostly the result of driver's fault (53%), from other on driver's cause at (47%).

These faults consist of 2 factors, namely, lack of knowledge regarding safe driving and drinking alcohol. It was found that almost half of the drivers who suffered injury have violated traffic lights and signs and the rest were intoxicated.

Studies confirm that drinking drivers are more likely to loose control of the vehicle especially in the case of running curved roads during night time than those who don't drink. This caused single persons' injury in 25% of the total number of injuries. Intoxication also causes higher probability in violating traffic signs and lack of awareness driving rules.

The purpose of the study were to study the impact of alcohol drinking on traffic injury in upper northern region of Thailand.

## MATERIALS AND METHODS

This research covered two highest traffic injury provinces in the upper northern region of Thailand. The method used in this study was cross-sectional prospective study.

**Population and sample group:** Population and sample group selected in this research were the patients seeking health care services at Nakomping Hospital, Chiang Mai Provincial Hospital and Chiang Rai Provincial Hospital from July 1-August 15, 2007. Evaluation of sample group was based on evaluation done by medical doctors indicated on the Out Patient Department (OPD) cards that the patient suffered from accident related to alcohol drinking.

**Research tools and data collection:** Primary data collection was carried out by questionnaires designed by researchers and then by holding meetings/trainings among the hospital officials who helped in the data collection. The primary data was collected by research assistants designed by researchers to record personal data, history of injury and other information and also by questionnaire to examine alcohol consumption behavior of AUDIT Test. All information about patients suffering from traffic injuries was collected in the emergency unit during the designated period of time.

**Statistic and data analysis:** Data analysis was carried out using Odds Ratio, Confident Interval, Chi-square and Logistic Regression Analysis.

## RESULTS AND DISCUSSION

Regarding general information of the patients in this study, it was found that the majority of the sample group were male (74.0%) and the rest (26.0%) were female. Most of them were at the age of 16-30 years (30.6%) followed by 31-45 years (20.2%). Regarding the marital status, most of the respondents were married (54.6%), followed by singles (39.6%). With respect to the level of education, most of them completed primary education or similar (47.5%) followed by further studying (29.2%). Regarding the occupation, most of the subjects were general employees (36.9%) followed by agriculturists (25.7%) and most of their earning salary per month was at the range between 2,501-5,000 baht/month (41.7%), followed by 5,001-7,500 baht/month (20.0%) (Table 1). Regarding drinking behaviour of the sample group, 36% of the patients had drinking parents. Regarding drinking behavior of the sample group, the study shows that most of subjects

Table 1: Distribution of demographic variables

General information	Number	%
<b>Gender</b>		
Male	271	74.0
Female	95	26.0
<b>Age (years)</b>		
<16	69	18.9
16-30	112	30.6
31-45	74	20.2
46-60	71	19.4
≥ 61	40	10.9
<b>Marital status</b>		
Single	145	39.6
Married	200	54.6
Divorced	21	5.7
<b>Educational background</b>		
No education	5	1.4
Elementary school	174	47.5
Secondary school	167	45.6
Diploma	7	1.9
Bachelor or higher	13	3.6
<b>Career</b>		
Agricultural	94	25.7
Employee	135	36.9
Business/vendors	11	3.0
Student	74	20.2
Officer	52	14.2
<b>Monthly income (Baht)</b>		
< 2,500	50	13.7
2,501-5,000	121	41.7
5,001-7,500	69	20.0
7,501-10,000	46	10.4
10,001-12,500	33	5.0
≥ 12,500	47	10.8
<b>Parents drinking</b>		
Drinker	149	40.7
Abstainer	217	59.3
<b>Relatives or close friends drinking</b>		
Drinker	310	84.7
Abstainer	56	15.3
<b>Smoking</b>		
No smoking	236	64.5
Used to smoke	36	9.8
Smoking	94	25.7

(42.3%) drank <1 time/month. Most of the sample group (77.7%), drank for socialization purpose, while most of the sample group (22.9%), drank in celebrating a new event such as inaugurating a new house.

Most of the sample group (44.7%), drank beer and (37.4%), drank spirit. In terms of frequency, (65.4%) of the subjects sometimes drank heavily. About 60.3% of drunkard drivers were driving by themselves, while 40.7% of the subjects were professional drivers. The majority of alcohol drinkers spent <100 baht/month and only 12.8% spent >300 baht/month (Table 2).

Regarding history of injury of the sample group, the results of this research showed that most of the subjects (84.7%) experienced traffic injury. Most of the injuries (84.8%) were cause by motorcycles. About 50.3% experience medium severity of injury, self occurrence (56.5%), a visual illusion (10%), drowsiness (9.4%), poor visibility (26.8%), impetuous (15.2%), negligence (59.7%), Drinking before driving (36.1), medium drinking (17.1%) (Table 3).

Table 2: Drinking behavior

Drinking behavior	Number	%
<b>Current of drinks</b>		
No drinking	136	37.2
Used to drink	98	26.8
Drinking	132	36.0
<b>Frequency of drinks</b>		
<1 time/month	56	42.3
1 time/month	26	19.5
1 time/week	14	10.7
2-3 time/week	14	10.7
3-4 time/week	12	8.7
>4 time/week	11	8.1
<b>Cause of drinks</b>		
Association	103	77.7
Habit	19	14.5
Stress	7	5.6
Others	3	2.2
<b>Event of drinks</b>		
Celebrate new house	30	22.9
Celebrate Songkran day	27	20.1
Celebrate wedding	22	16.8
Cremation rites	14	10.6
Celebrate birthday	13	10.1
Celebrate new year	13	9.5
Celebrate priesthood	10	7.8
Celebrate Valentine day	2	1.7
<b>Types of drinks</b>		
Beer	59	44.7
Local spirit	49	37.4
Spirit	19	14.5
Wine	4	3.4
<b>Frequency of heavy drinking</b>		
No	28	21.2
Sometime	86	65.4
Repeatedly	18	13.4
<b>History of drinking and driving</b>		
No	52	39.7
Yes	80	60.3
<b>Frequency of drinking and driving</b>		
Sometime	51	38.9
Often	27	20.4
Repeatedly	54	40.7
<b>Payment for drinking</b>		
<100 Bath/month	92	69.8
101-200 Bath/month	13	10.1
201-300 Bath/month	10	7.3
>300 Bath/month	17	12.8

Concerning the correlation between alcohol consumption and traffic injury, it was found out that traffic injury significantly correlated to alcohol drinking, the level of significance being ( $p = 0.001$ ). Drinking drivers were found to be 3.4 times> likely to have injury than non-drinking drivers (Table 4).

With respect to analysis of the correlation between independent variable and dependent variable (traffic injury) by Logistic Regression Analysis, selecting independent variable into the equation by ENTER technique, results showed that factors relating to age range and alcohol drinking have an effect on dependent variable with statistically significance and can explain the variation of traffic injury at 72.20%. Regarding the relationship between the variable of study and traffic

Table 3: History of traffic injury

History	Number	%
<b>Cause of sickness</b>		
Traffic injury	310	84.7
Others	56	15.3
<b>Vehicle types</b>		
Bicycle	17	5.5
Motorcycles	263	84.8
Cars/taxi	16	5.2
Motor-tricycles	3	1.0
Others	11	3.5
<b>Severity of Injury</b>		
Severe	109	35.2
Medium	156	50.3
Little	45	14.5
<b>Injury occurrence</b>		
Self occurrence	175	56.5
Crash occurrence	108	34.8
Others	27	8.7
<b>Visual illusion cause</b>		
No	279	90.0
Yes	31	10.0
<b>Drowsy cause</b>		
No	281	90.6
Yes	29	9.4
<b>Poor vision</b>		
No	227	73.2
Yes	83	26.8
<b>Impetuous cause</b>		
No	263	84.8
Yes	47	15.2
<b>Negligent cause</b>		
No	125	40.3
Yes	185	59.7
<b>Drinking cause</b>		
No	187	60.3
Yes	123	39.7
<b>Level of drinking</b>		
Soft	58	47.1
Medium	53	43.1
Heavy	12	9.8

injury, it was found out that impetuous drivers were 28.57 times> likely to suffer from traffic injuries than non-impetuous drivers, drowsy drivers were 30.30 times> likely to suffer from traffic injuries than non-drowsy drivers, reckless drivers were 200 times> likely to suffer from traffic injuries than reckless drivers and drivers with poor vision were 250 times> likely to suffer from traffic injuries than those drivers with good vision (Table 5).

According to the findings of this research study, the subjects consist largely of those person characterized as general employees with lower income which is a major factor for alcohol consumption behavior. It was found out that most of drinkers were males with low income which corresponds to the study done by Suriyawongphaisarn and Phalittaphonkarnphim (2001) and that most of the group who experienced traffic injuries were those using motorcycles which correspond to the study done by Siviroj.

Attention should be paid upon roads in the vicinity of village or Sub-district administrative area where most of the injuries occurred while roads in the municipality or in the urban area should be monitored as well.

Table 4: The relationship between alcohol consumption and traffic injury

Drinking	Total	Traffic injury		No traffic injury	
		Number	%	Number	%
Yes	132	123	93.2	9	6.8
No	234	187	79.9	47	20.1
Total	366	310	84.7	56	15.3

$\chi^2_{(n=0.05, df=1)} = 11.463$ ,  $p = 0.001$ , OR = 3.435, 95%CI = 1.625-7.261

Table 5: The analysis of the correlation between independent variable and dependent variable (traffic injury) by logistic regression analysis

Factors	B	SE	Wald	DF	Sig.	Exp (B)
ACCL_2	-3.402	1.487	5.233	1	0.022	0.033
ACCL_3	-5.478	1.276	18.436	1	0.000	0.004
ACCL_4	-3.355	1.525	4.840	1	0.028	0.035
ACCL_5	-5.382	1.029	27.373	1	0.000	0.005
Vehicle	-22.444	1986.474	0.000	1	0.991	0.000
Constant	3.278	0.722	20.619	1	0.000	26.516

The major cause of injury was found to be negligence, while relevant factors are abnormal and a visual illusion, drowsiness, poor visibility, impetuous and self occurrence in accordance with study done by Chartbanchachai (1997).

Moreover, it indicates that injuries related to alcohol consumption to the extent that those who are intoxicated will face almost three times the probability of experiencing injuries than normal people. The results of the research study conducted by Virojsangarun (1996) compared alcohol drinkers and alcohol abstainers. The results concluded that alcohol drinkers would face traffic injuries of the self occurrence type at the higher rate than alcohol abstainers.

## CONCLUSION

The findings of this research indicate that Traffic injury is significantly related to alcohol consumption. Drinking drivers will experience traffic injuries 3.4 times> normal drivers.

In this regard, it said that after taking alcohol, drivers, especially adolescent group, may lessen their self-control, awareness and drive negligently without thinking of any consequences and ultimately give rises to higher risk of traffic injuries. Moreover, alcohol can cause delay and ineffective decision making ability by the drinker which may cause even more severe injuries.

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