MOTORCYCLE ACCIDENTS, ALCOHOL INTOXICATION AND FUTILE HELMET LEGISLATION IN THAILAND: HOW LONG MUST WE TOLERATE?

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Abstract: This research study estimates the risk factor involved in alcohol impaired driving and the disregard of helmet legislation from hospital data of 28 public hospitals in Thailand (from year 1999 to 2003) and thereby calculates the economic loss in motorcycle accidents influenced by alcohol consumption. It also unveils the alleged association between the marketing and advertising strategies of the alcohol and motorcycle manufacturers and motorcycle accidents. The outcome of the study estimates the economic loss due to motorcycle accidents involving alcohol to be US$ 1,444 million per year. The study also reveals from a questionnaire survey that the campaigns against drunk and un-helmeted motorcycle riding is failing against lucrative thrill seeking marketing strategies adopted by the alcohol and motorcycle industries to attract the young generation.

Key Words: motorcycle accidents, risk factors, industry involvement

1. BACKGROUND

Injuries by road accidents have been one of the major causes of death in Thailand since 1969 (Ministry of Public Health, Thailand, 2002). In a speech delivered by the former Minister of Transport of Thailand, Mr. Wan Muhamad Nor Matha, during the opening ceremony of a Road Safety Audit Conference held in Bangkok on June 14, 2001, he stated that:

“…the number of Thais who were killed during all wars that our country has been engaged in are still far less than the number of people lost by road accidents, we can no longer let this serious matter rest”

As road accidents in Thailand will continue to occur; more lives will be lost together with many more injured and disabled; accumulating problems and losses which cause a substantial effect to the Thai economy (Tanaboriboon, 2005). In the road safety master plan developed by the Ministry of Transport (1997), it has been mention that Thailand has to overburden an economic loss of US$ 2,500(1 US$ = 38 THB approximately) million every year. In a further refined research study, Luathep et al. (2005) estimated the economic loss in road accidents to be around US$ 3,500 million that is tantamount to 2.56% of the country’s GNP.

Motorcycle accidents comprise of the major portion of road accidents in Thailand. Tanaboriboon (2005) mentioned that considering the statistics and related documents from all available sources in the country, all data have pointed out one quite obvious fact that
motorcycle is the most vulnerable mode of transport in Thailand. To further corroborate, Hossain (2006) in his in-depth data mining on the hospital data pointed out that around 76% of the injured accident victims are either motorcycle drivers or passengers. Therefore, it can be evidenced that motorcycle accidents have continuing impacted into Thai public health and economy. During the last few years, several research studies have been conducted to identify the determinants of accidents and resulting severities to enervate motorcycle accidents as well as their outcomes. It has been unanimously accepted that are drink driving and the disregards to the helmet legislation have been the major causes of motorcycle accidents and its casualties. To combat these two risk factors, several attempts have been adopted over the years mainly in the area of enforcement and legislation. However, it is widely believed that motorcycle accidents and its high casualty rate still prevails the road accident patterns in Thailand.

One of the best methods to surmount a crisis is to identify the root of the problem which can facilitate “prevention” rather than “cure”. However, unfortunately, it can be noticed that Thailand has always preferred “cure” over “prevention” in road safety reflected from their efforts that encourages punishing the drunk drivers or un-helmeted motorcyclists rather than regulating their exposure to alcohol and motorcycle commercials enticing thrill seeking and speeding. The first initiative to reduce the alcohol exposure came when Royal Thai Government banned TV commercials for booze from 5 AM to 10 PM since October 2003. The legislation was followed by a complete ban of alcohol advertisements in all forms of mass media covering television, newspapers as well as billboards which is now in action since December 2006 (GAIN Report, 2006). However, this generated enormous protest from the alcohol beverage producing companies emphasizing the claim that it will have large downbeat impact on the stakeholders of this industry – the producers, distributors and the advertising agencies. Moreover, there is a larking threat that the alcohol beverage producing companies may exploit the US$70 million that they spend for advertising to reduce the price of alcohol and encourage more consumers thereby. In fact, this assertion possesses a strong foundation as their massive alcohol distribution network extends up to every nook of Thailand, even within the proximity of the universities. Furthermore, the alcohol beverage industries generate tax revenue of more than several billion Thai Baht each year (Official website of Thai Beverage Public Company Limited) and these companies are indicating a possible reduction in government’s revenue due to the control of drinking empowered by the new laws. Considering this situation, it has now become vividly imperative to compare the approximate economic loss directly being derived by the accidents involving alcohol consumption and the influence of the alcohol beverage industry in Thailand.

The other top ranking risk factor, disregard of the helmet use by the motorcycle users, drink driving has increasingly contributed in the severity of accident than directly being the cause of accident. However, when more than 87% of the motorcycle accident victims receive deadly head injuries (Hossain et al., 2006), it is unrealistic to combat motorcycle accidents excluding helmet legislation. Suriyawongpaisal (2006) in his lecture in the International Training on Injury Surveillance indicated that there is a coherent relationship among the use of helmet, motorcycle advertisement and the risk taking behavior of the young motorcyclists. He further expressed his concern regarding the roll of advertisement and their perceived manipulative intent in enhancing or disrupting risk taking behavior. Substantial amount of motorcycle advertisements focus on thrill seeking, speeding and target to attract the attention of the teenagers - the potential customers. Motorcycle advertisements enticing high speed driving and ignoring the use of helmet is a common manner in Thailand. Therefore, it is important to fathom the ‘30 second impact’ of TV commercials along with advertisements through other
medias imprinted into the lifestyle of young motorcyclists and thereby facilitate the policy makers to impose restrictions on these types of marketing strategies, if necessary.

The purpose of this study is to provide a concrete idea about the underlying determinates of motorcycle accidents and the resulting severity of injuries, economic losses engendered by these determinants and their relationship with the alcohol and motorcycle manufacturing industries. The specific objectives of this research study are:

- Determine the risk of drunk driving and the disregard of helmet legislation from hospital data and thereby calculate the economic loss in motorcycle accidents influenced by alcohol consumption,
- Unveil the alleged relationship among the marketing and advertising strategies of the alcohol and motorcycle manufacturers and motorcycle accidents (if any), and
- Compare the net loss due to motorcycle accidents involving intoxication with the influence of the alcohol industry in Thailand.

2. DATA SOURCE

Thailand has an Injury Surveillance (IS) database in action since 1995. One of the main objectives of this database is to facilitate injury prevention at both local and national level (Ministry of Public Health, 2002). The database contains 72 fields for each complete row of information. The key datasets of the IS database include personal information; demographical characteristics; time and location of accident occurrence; type of vehicles involved; type of road users; mode of transfer to hospital; presence of risk behaviors (alcohol consumption, drug, seatbelt and helmet use); nature of first aids; vital signs (blood pressure, respiratory rate, pulse rate); coma scale; nature of injury (blunt, penetrating or combined); status at discharge from emergency rooms/wards; diagnosis based on ICD10 (ICD10, 2003); body region classifications and severity of injury (Suriyawongpaisal et al., 2003).

Up to now there are 28 public hospitals in Thailand within the Injury Surveillance Network. Base on this study, a total of 195,562 records of motorcycle accident victims are selected from the IS data of 28 public hospitals consisting of 316,868 records for the period of 1999 to 2003. These records contain valid complete information about respiratory rate, Glasgow coma scale, blood pressure, severity of injury, age and type of injury (blunt/penetrating) of the patients that are required to calculate the severity of injury, a key parameter used in this research study. Of the 195,562 records, 185,927 records contain complete information about alcohol consumption where as 182,597 of them have full information about the use of helmet. There are 178,820 records containing complete information about both alcohol and helmet.

The study is also bolstered by statistical data related to GDP, alcohol production, population, cost of advertising, motorcycle production, etc. that have been collected from various sources. Data collection was performed through a questionnaire survey conducted in a reputed university of Thailand situated within the periphery of Bangkok.
3. METHODOLOGY

The framework of this study is as presented in Figure 1.

This study reviews efficacy of the alcohol and helmet legislations by analyzing the trends from 1999 to 2003 based on the IS data. Afterwards, the study calculates the total loss due to motorcycle accidents involving alcohol consumption as presented in Equation 1:

\[ ELMR = X \times Y \times I \] (1)

Where,

- \( ELMR \) = Economic loss in motorcycle accident due to a single risk factor (million US$/year).
- \( X \) = Monetary value of yearly loss due to road accidents (million US$/year)
- \( Y \) = Ratio of motorcycle accident victims to the total accident victims
- \( I \) = Impact factor due to risk

The determination of ‘I’, defined as ‘Impact factor due to risk’, can be calculated through the determination of the risk ratio which can be obtained by comparing accident severity of the victims ‘with’ and ‘without’ alcohol intoxication and wearing helmet. Therefore, ‘I’ can be calculated through Equation 2.

\[ I = \frac{q \times r}{p + q \times r} \] (2)
Where,

\[ q = \text{no. of victims found positive to ‘risk’} \]
\[ p = \text{no. of victims not found positive to ‘risk’} \]
\[ r = \text{risk ratio}. \]

The preceding step to calculate the ‘risk ratio’ by the determination of the severity of the injuries of the accident victim from alcohol intoxication and without wearing helmet. This study employed ‘severity index’ approach (Tanaboriboon et al., 1999; Iamtrakul et al., 2003), a well accepted method in Thailand, to quantify the severity of injury of each motorcycle accident victim expressed in ‘per 1000 victims’. Here, the severity index is derived from the probability of survival of the patients. The probability of survival can be estimated with world famous TRISS model (Champion, 1992), a logistic regression model, as demonstrated in Equation 3 and 4:

\[
Ps = \frac{1}{1 + e^{-b}} \tag{3}
\]
\[
b = b_0 + b_1(RTS) + b_2(ISS) + b_3(A) \tag{4}
\]

Where,

\[ Ps = \text{Probability of Survival} \]
\[ e = \text{base of Napierian logarithms} \]
\[ RTS = \text{Revised Trauma Score} \]
\[ ISS = \text{Injury Severity Score} \]
\[ A = \text{Age coding value; } \]
\[ A = 1: \text{if patient age} > 55, A = 0: \text{if patient age} \leq 55 \]

The weights of \( b_0, b_1, b_2, \) and \( b_3 \) in the TRISS model are derived from the data from USA. However, there is a gulf of difference between the emergency services, medical facilities, patient care, climate, availability of medicines and equipment in US and the developing countries like Thailand. Hence, this research study estimates the probability of survival utilizing the calibrated TRISS model developed by Hossain (2006) based on Thai injury surveillance data. The derived weights are shown in Table 1.

<table>
<thead>
<tr>
<th>Injury Type</th>
<th>( b_0 )</th>
<th>( b_1(RTS) )</th>
<th>( b_2(ISS) )</th>
<th>( b_3(A) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blunt</td>
<td>-1.820</td>
<td>1.012</td>
<td>-0.115</td>
<td>-1.065</td>
</tr>
<tr>
<td>Penetrating</td>
<td>-1.813</td>
<td>0.977</td>
<td>-0.124</td>
<td>-0.975</td>
</tr>
</tbody>
</table>

Source: Hossain (2006)

The Revised Trauma Score (RTS) is a physiological scoring system derived from three independent variables: Glasgow Coma Scale (GCS), Systolic Blood Pressure (SBP), and Respiratory Rate (RR). Prior to calculate RTS, these three independent variables are assigned code values from 4 (normal) to 0 (severe) as indicated in Table 2. The RTS is calculated using Equation 4. Values obtained from the equation range from 0 to 7.8408. Higher values indicate better prognosis (Champion et al., 1992).
\[
RTS = 0.9368GCS_c + 0.7326SBP_c + 0.2908RR_c
\]  
(5)

Where,

\(RTS\) = Revised Trauma Score  
\(GCS_c\) = Coded value for Glasgow Coma Scale  
\(SBP_c\) = Coded value for Systolic Blood Pressure  
\(RR_c\) = Coded value for Respiratory Rate

The detailed method to calculate the code values of \(GCS_c\), \(SBP_c\), \(RR_c\) is out of the scope of this study and can be obtained from Reungsorn (2002), Champion et al. (1992) and Mcdermott, (1992).

Severity of injury is coherent with the probability of death which eventually can be evaluated from the probability of survival (e.g., \(1 - \text{probability of survival} = \text{probability to die/severity of injury}\)). The risk ratio ‘\(r\)’ is estimated by determining the average severity of injury for the two groups of accident victims: ‘positive to risk factor’ and ‘not positive to risk factor’. The estimation procedure is further explained with Equation 6.

\[
r = \frac{\sum_{i=1}^{n} (1 - PS_i)/n}{\sum_{j=1}^{m} (1 - PS_j)/m}
\]  
(6)

Where,

\(r\) = risk ratio  
\(PS_i\) = Probability of Survival of the motorcycle accident victim \(i\) found positive to risk  
\(PS_j\) = Probability of Survival of the motorcycle accident victim \(i\) not found positive to risk  
\(n\) = Number of motorcycle accident victims positive to risk factor  
\(m\) = Number of motorcycle accident victims not positive to risk factor

Thus, though a systematic execution of the six aforementioned equations, it is possible to estimate the total economic loss due to motorcycle accidents involving the risk of alcohol consumption. After that, bolstered by the statistics and research outcome from different sources, study amalgamates quantitative and qualitative research methods to produce several powerful insights into the prevailing marketing strategies of alcohol producers and motorcycle manufacturers and the countervailing campaigns against drunk and un-helmeted driving by the road safety related organizations. Lastly, the study also alerts how negative advertisements by the motorcycle manufacturing industries can influence the paradigm shift of a moderate driver towards thrill seeking through risky driving.

Finally, a survey was conducted in a reputed university in Thailand within the proximity of Bangkok to investigate forces enticing drunk driving and disregarding the helmet legislation and the efficacy of the campaigns conducted by the surmounting agencies to improve the situation. Due to the transportation and communication facilities of the university, it is expected that the participants are adequately exposed to all the ingenious ways along with advertisements adopted by different alcohol producers and distributors. Along with it, the study area is also well exposed to several government supported organizations running campaigns against drink driving, disregards towards helmet use and speeding. This creates an even ground to compare the effectiveness of these two contradictory campaigns. A total of 221 respondents took part in the questionnaire survey.
4. DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Trends of Accidents involving Alcohol and Un-helmeted Motorcyclists

While describing the drink driving situation in USA, Waller (2001) stated that drunk driving was considered more or less a ‘folk crime’, almost a rite of passage for young males. Most drink driving adults in the United States, and most of them, at some point, drove after doing so. The scenario can be also found fairly proverbial in Thailand. Based on the IS data, this research found that 78.92% of the motorcycle accident victims are drivers. It has also been seen that 39.67% of these motorcycle accident victims are riding under the influence of alcohol when they reach the hospital. The ratio of alcohol intake shows an alarming result when the alcohol impaired motorcycle accident victims are classified in two groups – drivers and occupants. It can be found that in the year 2003 more than 48% of the injured drivers are found to be drinking and driving where the percentage for the intoxicated passengers is around 24%. The result emphasizes the fact that a significant portion of the drunk drivers are not only getting themselves injured, but also being responsible for the injury of passengers. Afterwards, a comparative study is conducted to observe the change in number of the drunk and non-drunk motorcycle accident victims from 1999 to 2003. The outcomes of the analysis are presented in Figure 2 and Figure 3.

![Figure 2 Number of motorcycle accident victims based on alcohol consumption](image)

The ratio between the drunk and non-drunk motorcycle users is 0.61 in 1999. After that it increases up to 0.65 and remains almost steady (0.66) till the year 2002. Afterwards, there is an enormous increase in the ratio and it reaches 0.78 in 2003. For the motorcycle drivers, the ratio rises up from 0.72 in 1999 to 0.93 in 2003. Hence, as the increase of both the numbers and the ratios are evident, it can be inferred that the overall drinking problem has deteriorated with time and it has gone alarmingly high for the motorcycle drivers.

Other than alcohol, use of helmet has been identified as another risk factor for the motorcycle users. The analysis of this study suggests that 90.8% of the motorcycle accident victims are
found to ignore using helmets. The percentage is as high as 96.2% for the passengers.

![Figure 3 Ratio of motorcycle accident victims based on alcohol consumption](image)

4.2 Economic Loss due to motorcycle accidents involving risk factors:

Following the aforementioned methodology, the risk factors for three different groups (intoxicated and non-intoxicated victims, helmet users and non-users and victims indulged with both the risk factors and victims without the presence of any risk factor) are compared as presented in Table 2. The risk ratios are calculated utilizing the series of equations from Equation 3 to Equation 6.

<table>
<thead>
<tr>
<th>Category*</th>
<th>Number</th>
<th>Value</th>
<th>Severity Index</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol (+)</td>
<td>77,060</td>
<td>0.04177</td>
<td>41.77</td>
<td>1.31</td>
</tr>
<tr>
<td>Alcohol (-)</td>
<td>108,867</td>
<td>0.03177</td>
<td>31.77</td>
<td>1.98</td>
</tr>
<tr>
<td>Helmet (-)</td>
<td>165,519</td>
<td>0.03902</td>
<td>39.02</td>
<td></td>
</tr>
<tr>
<td>Helmet (+)</td>
<td>17,078</td>
<td>0.01971</td>
<td>19.71</td>
<td></td>
</tr>
<tr>
<td>Alcohol (+) Helmet (-)</td>
<td>68,311</td>
<td>0.04018</td>
<td>40.18</td>
<td>2.26</td>
</tr>
<tr>
<td>Alcohol (-) Helmet (+)</td>
<td>12,161</td>
<td>0.01781</td>
<td>17.81</td>
<td></td>
</tr>
<tr>
<td>Alcohol (-) Helmet (-)</td>
<td>93633</td>
<td>0.03190</td>
<td>31.90</td>
<td>1.0</td>
</tr>
</tbody>
</table>

* Alcohol (+)= Consumed Alcohol, Alcohol (-)=Did Not Consume Alcohol, Helmet(+)=Used Helmet, Helmet (-) = Did Not Use Helmet.

Table 2 exhibits the odds of higher severity due to the presence of two risk factors: alcohol intoxication and disregards to the helmet legislation. The severity can be as high as 2.26 times for the drunk and un-helmeted motorcyclists if compared with the victims wearing helmet as well as not drunk. Later, the value of risk factor is used to calculate the net loss due to motorcycle accidents induced by alcohol intoxication. The value of net loss due to road accident in is collected from the outcome of the rigorous research study of Luathep et al. (2005) with the data from 20,600 hospitals in Thailand for the year 2002. The cost components include hospital and medical cost, loss of output (contribution could not be made
by the person to the society due to fatality of injury), property damage cost, insurance and administrative cost, emergency medical service cost, administrative cost of police due to accident and human cost (pain, grief and suffering). Based on this information, the net loss due to motorcycle accidents induced by alcohol is enumerated in Table 3.

Table 3 Net loss due to motorcycle accidents involving risk factors

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Net loss due to MC accidents (million US$/Year)</th>
<th>Net loss due to Road Accidents (million US$/Year)</th>
<th>No. of victims from IS Data</th>
<th>No. of victims not with risk factor from IS Data</th>
<th>Risk ratio</th>
<th>Impact factor</th>
<th>Ratio of MC accident victims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intoxicated with Alcohol</td>
<td>1,277</td>
<td>77,060</td>
<td>108,867</td>
<td>1.31</td>
<td>0.48</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>Not Wearing Helmet</td>
<td>452</td>
<td>3,500*</td>
<td>17,078</td>
<td>175,519</td>
<td>1.98</td>
<td>0.17</td>
<td></td>
</tr>
</tbody>
</table>

*MC=Motorcycle

The result of this study made obvious fact of the impact of accident to economic of the country in term of monetary value. It pointed out that Thailand loses more than US$ 1.7 billion each year only due to motorcycle accidents involving risk factors, especially the majority part of intoxicated with alcohol. The further comparison of this situation to burgeoning alcohol and motorcycle industry will be discussed in the next section.

4.3 Motorcycle Accidents, Thai Economy and the Burgeoning Alcohol and Motorcycle Industry

In order to understand the extent of alcohol exposure to the young Thai generation, it is important to understand the presence of different types, brands and the multifarious market strategies instituted by the alcohol beverage producing industries in micro level. The GANT report released in 2006 reviles that compared to other country in the world, Thailand is the fifth position in per capita alcohol consumption. Some astounding statistics provided by the national survey conducted by the National Statistics Office in 1996 and 2001 suggests that in 1996, 31.6% of the total Thai population used to be alcohol consumer. The number became 32.6% in 2001. Alcohol consumption in different age groups unveils the alarming fact that 21.1% of the population belonging to the age group 15-24 are found to be in the habit of alcohol consumption. The percentage shows an upward trend and escalates to a value of 21.6% by 2001. The popular types of alcohol available in Thailand includes beer, imported whisky, local whisky, brandy, wine and home made alcohol. Of these, beer has been the alcohol drink fetching substantial amount of money to the alcohol beverage producers due to its mounting popularity among the youth of Thailand. Thai alcohol beverage producers powered by a strong distributing channel have capitalized the demand along with the market liberalization.

A large portion of the beer market here is mainly engulfed by two companies: the Boon Rawd Brewery Company and the Thai Beverage Public Company Limited. The brands of beer produced by Boon Rawad include Singha, Leo, Thai and Kloster (international premium) beer. On the other hand, Thai Beverage produces Beer Chang and Beer Archa. Some of their key marketing strategies include sponsorship of popular TV programs, sports, philanthropic
activities, organization of beer festivals, beer parties in the popular shopping complexes and not to mention price cut and promotion and distribution of gifts with specific amount of purchase. According to the data obtained from the Thailand Advertising Industry, in the year 2000, the top ten beer brands in Thailand spent more than 1.6 billion Baht (US$42 million) on advertising. Now days, alcohol producers and distributors annually spend around 2.6 billion Baht (US$70 million) on advertising. Figure 4 simultaneously represents the GDP\(^1\), alcohol production\(^2\) and the number of fatal motorcycle accident victims\(^3\) under the influence of alcohol. Base on this figure, it gives an idea about the situation of accident prevention program that requires an effective measurement to strengthen the program on an improvement of aggravating accident situation. Only initiate the impose of the traffic law 1994 of Thailand, drivers whose blood alcohol concentrations are over 0.05% or 50 mg/dL will be arrested, might not be sufficient. The evidence of program is the establishing roadside sobriety checkpoints, however, as more and more people drive automobiles, the number of traffic accidents involving drunk drivers has soared (Lekskulchai and Rattanawibool, 2007). This might be due to the reason that the deluge in alcohol production harmonizes with the surge in number of drunken motorcycle accident fatal victims. The claim is corroborated by the statement in the GAIN report (2006) that affirms a 5% increase in the alcohol related accidents over the last four years (2003-2006).

![Figure 4 GDP, alcohol production and the number of fatal intoxicated motorcycle accident victims (IS data) in different years in Thailand](image)

Note: \(\text{GDP}^1\) is in Thousand Baht and Alcohol Production\(^2\) is in 10 million Liters
Source: Office of National Economic and Social Development Board, Office of the Prime Minister\(^1\), World Health Organization\(^2\), IS Database of Thailand (1999-2003)\(^3\)

At this time, considering these statistics and relationships, it will be of paramount importance to the policy makers if the total worth of the alcohol beverage industries can be compared with the economic loss that Thai economy sustains each year due to motorcycle accidents induced by alcohol intoxication. This research study came up with an answer to this enquiry as well. According to the GAIN report (2006), within the period between year 2003 to 2005, beer intake rose to 1.6 billion liters from 1.5 billion liters in Thailand. And, from the official
website of the Thai Beverage (http://www.thaibev.com/) in can be learned that the registered capital of the company was 29 billion Baht (US$ 763 million) in July, 2005 and it produced 808 million liters of beer for the Thai market in the same year. Therefore, it can be roughly calculated that Thai Beverage contributed around 50% of the beer consumption in Thailand in 2005. This astounding information revealed that the registered capital of one of the largest beer producing industries in Thailand is just over 50% of the net economic loss suffered by Thailand due to alcohol induced motorcycle accidents each year.

Similarly an upward trend can be recognized when the number of productions of motorcycles is compared with the number of motorcycle accident occurrences in different years as presented in Figure 5.

4.4 The Supportive Outcome of the Survey

This study also performed data collection to be an supportive information to bring to light of the influence of alcohol and motorcycle advertisement on the teenager motorcycle users’ behavior and attitudes. This is based on the study confirmed that the young age group are the majority of motorcycle accident in Thailand (Iamtrakul et al., 2003). Thus, the survey conducted by interview all the respondents taking part in the form of questionnaire survey were. All of participants are between 18 to 25 year old with almost even gender distribution (male: 42.1%, female: 57.5%). More than 93% of the participants were undergraduate students, 3.6% master degree students and 0.5% doctoral degree students. In the questionnaire, the participants were requested to mention the name of one beer brand. The top four responses were Leo (35.57%), Singha (24.69%), Chang (19.75%) and Heineken beer (17.28%). A striking similarity can be found by observing the money spent by these beer manufacturers based on the data of year 2000 (obtained from the advertising industry of
Thailand) as the list is topped by Chang (US$ 8.36 million), Singha (US$ 8.31 million) and Leo beer (US$ 6.93 million). Heineken, being relatively new and bearing the label of premium beer accompanied by a high price tag, spent US$3.28 million in that year. During the month of November, i.e., just before alcohol commercials were banned from TV, newspapers and billboards, Heineken beer was among the top ten products (8th rank, US$ 1.24 million) being advertised in different media (The Advertising Association of Thailand). Consequently, in response to the question asked in this research study – “What was the last beer brand commercial that you saw on TV?” – Heineken topped with 36% followed by Singha (28%), Chang (18%) and Lao (18%).

On the contrary, the response to the questions asked to fathom the efficacy of the campaigns against drunk driving, disregard of helmet use and speeding, the findings of the questionnaire survey are quite chilling. Exactly 91% of the participants came across with commercials or advertisements refraining to drive in alcohol intoxicated condition. Yet, 30.3% participants were experienced with drunk driving at least once in their lifetime. To add more, 5.9% respondents expressed that there is a high possibility that they would find themselves drinking and riding motorcycle in the future and 29.4% were in dilemma whether they would drink and ride motorcycle or not. However, 58.4% participants expressed that they will never ride motorcycle in intoxicated condition and 6.3% respondents refrained from providing any answer to this rather direct question. In order to deeply understand the impact of these anti risk taking driving behavior advertisements, it is important to know how much attention these advertisements are being able to arrest. Depressingly, 45.2% respondents could not even remember where they had seen the anti risk taking driving advertisements whereas 51.1% identified that they saw the advertisements on TV. 75.6% participants were left clueless about the organizations running these campaigns while 23.1%, 0.9% and 0.5% participants mentioned the names of Thai Health Promotion Foundation, Department of Land Transport and Royal Thai Police respectively.

The outcome of the survey reflecting the young generation is an amalgamation of disappointment and hope. Suriwongpaisal (2006) in his presentation in the International Training on Injury Surveillance exhibited how the teenagers are being enticed with speeding and thrill seeking by the commercials of motorcycles of various manufacturers. To enervate the situation to a greater extent, the commercials encouraging the use of helmet are not being able to create a strong hold in the teenage minds. Acknowledged from the survey, 66.1% affirmed that the motorcycle commercials have significant influence on their choice when they want to purchase a new one and 44.3% participants avowed that the advertisements have impact on their driving behavior as well. Approximately 83.7% respondents believe that safe driving practice can reduce the number and severity of motorcycle accidents while 8.6% participants envisioned a safer vehicle design to be more effectual in accident alleviation than the other options. There was only 4.1% support in favor of harder enforcements. A substantial number of participants (83.3%) possessed no idea about the Thai standard for motorcycle helmets. Only 4.1% participants confirmed that they use safety helmet regularly. Around 59.3% respondents sometimes use helmet while 33.9% normally do not concern about wearing helmet while riding motorcycle. However, showing sizable contradiction, provided that they have enough money, 33.5% of the participants preferred settling for safety features to have highest priority while purchasing a new motorcycle closely followed by cost of the vehicle (25.3%; this group is reluctant to spend more on a motorcycle even if it is within the capacity of their purchasing power) and the contemporary fad (22.2%).

If a young motorcyclists regularly practice wearing helmet while driving and always refrain
himself from driving under the influence of alcohol, then they will become less vulnerable to experience accident. Therefore, there is no vivid way to prove that their good behavior will reward them with immediate benefits. On the contrary, a motorcyclist can drink and immediately seek thrill out of indiscipline driving. Therefore, the remuneration for the young law abiding motorcycle riders is rather abstract. The questionnaire survey certainly exposes this vulnerability of campaigns against drunk driving and motorcycle riding without helmet. This emphasizes the necessity to initiate more innovative notions to create awareness among the young motorcyclists and simultaneously refrain the aggressive marketing strategies adopted by the alcohol and motorcycle industries to engulf the mind of the young generation and allure them with the attractions of thrill seeking.

5. CONCLUSION AND RECOMMENDATION

Driving or being an occupant in a vehicle is one of the most dangerous tasks that a typical person does in his life regularly. Yet, people have to take this risk frequently in order to meet the requirements of going from one place to another for different purposes. As long as roads and vehicles are there, there will be accidents and road safety problems. However, accidents induced by disregards towards legislation are completely inexcusable. Situation becomes more intolerable when the disregard towards law is enticed and harbored to some extent by the commercial interest of certain industries. This research highlights the rapport between motorcycle accidents involving intoxicated and un-helmeted riders and the aggressive promotion strategies adopted by the alcohol producing and motorcycle manufacturing industries in Thailand.

According to the study, a drunk motorcycle user is prone to 1.31 times more severe injury than a non-drunk victim during a motorcycle accident. The value becomes 1.98 when the helmeted and un-helmeted motorcyclists are compared. And the motorcycle users indulged with both the risk factors are likely to sustain 2.26 times higher severe injuries in case of an accident. The study estimated a loss of US$ 1.7 billion each year only due to motorcycle accidents involved with alcohol intoxication which is higher than the market capital of the largest beer producing company in Thailand. The worse to come, the questionnaire unearthed how incomprehensive the campaigns against drunk and un-helmeted driving can be against lucrative thrill seeking marketing strategies that the alcohol and motorcycle industries have to offer. The statement can be corroborated by the findings of the survey which suggests that even though 91% respondents know about awareness creation campaigns, 35.3% of them may drink and ride motorcycle in future. In these circumstances, it is highly unlikely to surmount the disregards to alcohol legislation when alcohol beverages have such high accessibility through out the country. The study urges for continuous massive awareness creation activities addressing the young generation since their adolescence. This effort should be strengthened by harder enforcement and restrictions on deplorable business strategies acting against national interest.

Motorcycles, although being considered as an indispensable part Thai life, is chronologically emerging as a killing machine and motorcycle manufacturing industries have a key role to play in refurbishing this image. Every year motorcycle manufacturing companies enjoy a massive turnover inducing an immense competition among the companies to grab a share of the market. Therefore, advertisements play a significant role in this war to capture market share. This creates colossal importance on the message that the companies are disseminating.
to the viewers. It is expected that the motorcycle manufacturers will refrain from enticing people with thrill seeking opportunities and focus on disseminating messages that can inspire their consumers to evade risk taking behaviors. The survey conducted in this research study suggests that the young generation is aware of the importance of safe driving practice as 83.3% of them think that accidents can be reduced by safe driving practice. They have shown high interest in safer motorcycles as 33.5% of the participants put safety on top of all the categories while deciding to buy a new motorcycle. Hence, it becomes one of the responsibilities of the motorcycle manufacturers to ensure that they do not harvest their profit at the cost of innocent lives and concentrate on promoting their products focusing on safety measures. The study also unveiled that even the highly educated young generation is not aware of the helmet safety standards in Thailand (83.3%). What role mass media can play requires no suggestion here. Moreover, government can play a key role here by making it mandatory to vend standard helmet along with every new motorcycle.

It appears that more lives will be sacrificed and more people will embrace disability and Thai economy will continue paying heavy toll due to motorcycle accidents if appropriate measures regarding helmet and alcohol legislations are not taken. This research study concludes with a high hope that considering the enormous economic loss sustained by the government, responsible agencies will deposit substantially higher effort in awareness creation and simultaneously regulate any aggressive marketing strategy adopted by the alcohol and motorcycle producing industries out breaking thrill seeking through the practice of risk taking behavior by the motorcycle users.

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