Trend on Drink Drive and Road Accident Across Asian Region: A Review Study

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Abstract

Road accident is a distressing issue that has been faced by all countries worldwide. Asia contributed more than one fourth of the total of road accident rates every year. One of the leading road accident factors that have been reported by most scholars is the drink drive problem. Therefore, this review was conducted with an aim to systematically study the trend on the drink drive and road accident. Searches were performed in Wiley Online Library, Emerald, Scopus, Science Direct and Web of Science. A total of 2462 findings have been yielded and after the screening and reviewing process, only 23 studies were included in this review. In overall, most of the included studies were published in Accident Analysis and Prevention journal within the years of 2000 onwards. The scholars mostly have undertaken their studies using the case series research design and using the accident data cases as their sample. Finally, most of the studies were undertaken in China.

Keywords: Road accident, drink drive, Asian Region, systematic review.

Introduction

Road accidents contribute most of the global fatalities statistics in the world with approximately 1.35 million deaths every year. Further report by World Health Organization (WHO) reveals that about 20 to 50 million victims suffer from disabilities and other non-fatal injuries due to the road accident\textsuperscript{1}. Statistic shown that more than 90\% of the accident occurrences globally happened in the low and middle income countries, which indicates that the level of socioeconomic plays a role in influencing the road accident statistics. Less developed countries especially the African region recorded among the highest death rates due to the road traffic injuries\textsuperscript{1}.

Asian region also been reported facing a critical road accident problem with Thailand tops the fatalities statistics followed by Malaysia and Vietnam. Meanwhile, Singapore and Japan reported the lowest road fatalities\textsuperscript{2}. There are three main factors that lead toward the occurrence of road accident which are human factors, technical factors and environmental factors. Among these, human factors lead the most of the accident occurrences with approximately 90\%, whereas the remaining is due to the technical factors and environmental factors\textsuperscript{3,4}. Nevertheless, in certain country like Malaysia, it has been reported that 80\% of the road accident happened due to the human factors contradict to other countries worldwide\textsuperscript{5}.

The most common human factors that significantly lead toward the occurrences of road accident are the drivers’ intentional behaviour of breaking the traffic rules and regulation or also known as the traffic violation behaviour. Literatures reported that some of the traffic violation behaviour that commonly been committed by drivers are drink drive, illegal use of mobile phone while driving, tailgating or close following, run over red light, dangerous overtake, speeding, fail to turn the turning indicator and even driving during drowsiness\textsuperscript{6,7}. Among these violation behaviour, drink drive is been reported
as one of the leading accident causation\textsuperscript{6,7}. According to WHO, alcohol has cause one in every 20 deaths around the world and responsible for three million deaths every year\textsuperscript{8}. Due to this alarming fact, this paper is been constructed to systematically review the trend of the drink drive and road accident which specially been conducted in the Asian region.

Material and Method

A search has been conducted in five academic databases such as Wiley Online Library, Emerald, Scopus, Science Direct and Web of Science. The research timespan has been set within the year of 1951 until December 2018. The search also has been limit to research papers published in peer-reviewed journal as well as written in English language only. The researchers has outlined several keywords such as “determinant”, “factor”, “cause”, “road accident” and “traffic crash” in order to undertake the searching process. Apart from that, several Boolean Operators such as “OR” and “AND” also been used in order to assist the searching process. Moreover, the researchers also outlined several inclusion and exclusion criteria which used as the guideline in selecting the most appropriate research papers to be included in this review study. Finally, upon the completion of the search process, the researchers export all the related findings into the EndNote X7 for further reviewing process. The information on the inclusion and exclusion criteria is as below:

Inclusion Criteria:

1. Type of study: Any type of cross-sectional study either survey or interview or observation, case series and case control study.
2. Participant: All types of participant or sample (all vehicle drivers or rides) who either already involved in a road accident or not as well as accident data from authorities.
3. Outcomes: Any studies that investigate on the drink drive and road accident. The outcome of this review were explained in term of the year of studies been published, type of journal the studies been published, country or location were the studies been undertaken (specifically in Asian region only), participant or research sample used the studies and type of study design.

Exclusion Criteria:

1. Type of study: Any studies which categorised as review study, meta-analysis study, governmental report or any non-profit organization report, student dissertation or thesis.
2. Research focus: Any studies that investigate on the other factors that lead toward road accident either other human factors, technical factors and environmental factors.

Results

In overall, a total of 2462 findings were gathered from the five databases during the search process. Details information regarding the gathered findings was tabulated in Table 1. After all the findings were exported into EndNote X7, the researchers undertook the first screening and reviewing process to detect duplicate. In this process, the EndNote X7 filtered all the findings and deletes any duplication findings which found from all databases. A total of 271 duplicate articles were removed during this process. Next, the remaining 2191 findings have undergone the title screening process. During this process, the reviewers delete another 1344 unrelated title. After that, the reviewers read each abstract of the remaining 847 related title and 579 unrelated abstracts were deleted. Then, the reviewers retrieved the full text for the remaining 268 related abstracts through the EndNote X7 function. For certain abstracts that cannot be retrieved by the EndNote X7, the reviewers formally requested the full texts from the original authors either through their Research Gate account or their personal e-mail address. After all the full texts were gathered, the reviewers finally read all the full texts and only select papers which fulfil the inclusion and exclusion criteria. As a result, only 23 papers were included in this review study. Detail information on the overall screening and reviewing process can be referred to the PRISMA flow diagram as shown in the Figure 1.
Figure 1. PRISMA flow diagram of the included and excluded studies

Table 1: Search returns based on the academic databases

<table>
<thead>
<tr>
<th>Database</th>
<th>Timespan</th>
<th>Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wiley Online Library</td>
<td>1973 – 2018</td>
<td>141</td>
</tr>
<tr>
<td>Emerald</td>
<td>1951 – 2018</td>
<td>128</td>
</tr>
<tr>
<td>Scopus</td>
<td>1990 – 2018</td>
<td>789</td>
</tr>
<tr>
<td>ScienceDirect</td>
<td>1993 – 2018</td>
<td>855</td>
</tr>
<tr>
<td>Web of Science</td>
<td>1990 – 2018</td>
<td>549</td>
</tr>
</tbody>
</table>
Table 2: Detail on the type of journals and years of publication

<table>
<thead>
<tr>
<th>Journal</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident Analysis &amp; Prevention</td>
<td>1</td>
</tr>
<tr>
<td>Journal of Forensic and Legal Medicine</td>
<td></td>
</tr>
<tr>
<td>International Journal of Injury Control and Safety Promotion</td>
<td></td>
</tr>
<tr>
<td>Journal of Traffic and Transportation Engineering-English Edition</td>
<td></td>
</tr>
<tr>
<td>Journal of Transportation Engineering</td>
<td></td>
</tr>
<tr>
<td>SpringerPlus</td>
<td></td>
</tr>
<tr>
<td>Forensic Science International</td>
<td></td>
</tr>
<tr>
<td>Injury-International Journal of the Care of the Injured</td>
<td></td>
</tr>
<tr>
<td>Transportation Research Part F-Traffic Psychology and Behaviour</td>
<td></td>
</tr>
<tr>
<td>Journal of Safety Research</td>
<td></td>
</tr>
<tr>
<td>Tzu Chi Medical Journal</td>
<td></td>
</tr>
<tr>
<td>Transportation Research Procedia</td>
<td></td>
</tr>
<tr>
<td>Chinese Journal of Traumatology - English Edition</td>
<td></td>
</tr>
<tr>
<td>Chinese Journal of Traumatology</td>
<td></td>
</tr>
<tr>
<td>Planning Malaysia</td>
<td></td>
</tr>
<tr>
<td>Transport</td>
<td></td>
</tr>
<tr>
<td>International Journal of Crashworthiness</td>
<td></td>
</tr>
<tr>
<td>Iranian Journal of Public Health</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
</tr>
</tbody>
</table>

a. **Type of Journals and Years of Publication:** All included studies were published in 20 journals. Majority of the studies (n = 8) were published in Accident Analysis and Prevention, followed by four studies were published in PLoS ONE, three studies were published in Journal of Safety Research and two studies were published in ITE Journal (Institute of Transportation Engineers) and American Journal of Public Health respectively. Whereas, the remaining 15 studies were published in International Journal of Epidemiology, Safety Science, Journal of Traffic and Transportation Engineering-English Edition, SpringerPlus, British Medical Journal, New England Journal of Medicine, Tzu Chi Medical Journal, Psychiatry Research, Chinese Journal of Traumatology (English Edition), Procedia Engineering, Journal of Adolescent Health, Canadian Journal of Civil Engineering, Journal of Transport & Health, Planning Malaysia and Acta PolytechnicaHungarica. Meanwhile, regarding on the years of publication, majority of the studies (n = 5) were published in the years of 2011, 2013 and 2017 respectively, followed by four studies were published in the years of 2014 and 2016 respectively.
Next, three studies were published in the year of 2007 and two studies were published in the years of 2015 and 2018 respectively. Finally, one study was published in the years of 2003, 2006, 2010 and 2012 respectively. Overall, the results reveal an increase in publication over time. Detail information on the type of journals and years of publication can be found in Table 1.

b. Research setting: Diagram 1 shows the summary of the list of countries where all the included studies were conducted. In overall, the included studies were undertaken in 10 different countries across the Asian region. Most of the studies (n = 6) were undertaken in China followed by four studies in Turkey. Three studies were undertaken in Taiwan and two studies in India, Iran and Malaysia respectively. Finally, the remaining four studies were undertaken in Hong Kong, Thailand, Vietnam and United Arab Emirate (UAE).

c. Research Participant/Sample: All the included studies were conducted using several type of research sample of participant. Majority of the studies (n = 14) use the sample of accident data cases which gathered from the authorities. Four studies use the sample of actual accident victims followed by two studies that include students/young drivers as participants. Finally, the remaining three studies use the sample of professional and amateur drivers, general drivers (author did not provide the detail) and the combination of various participants such as bus drivers, motorcycle users, bus passengers, bus company manager, traffic policeman and local authorities. Diagram 2 shows the detail information on the research participant/sample.
d. **Type of Research Design:** All 23 included studies applied five different types of research designs with majority of the studies (n = 16) used case series. In the case series study, the information was gathered from the authorities. Four studies were cross-sectional studies, which three of them using questionnaire and one study using interview method. Meanwhile, two studies were case control study (data gathered from the accident victims’ intoxication result) and finally one study used the in-depth analysis of accident case to collect the data. Detail information on the type of research design can be referred to Diagram 3.

![Diagram 3. Detail on type of research design](image)

**Conclusion**

In overall, there has been an increasing of interest among researchers to explore the drink drive and road accident within the Asian. Majority of the included studies were published in the Accident Analysis and Prevention journal which is one of the high impact factor journals listed under the Scopus and Web of Science databases. Next, it also can be summarized that all included studies on drink drive and road accident in Asian region were been published on 2000 onward although the search process was conducted from the year of 1950 onward. Most of the included studies were published after 2013. Moreover, although there are 50 Asian countries across the region, only 10 countries were reported to undertake the study on drink drive and road accidents with majority of the studies were conducted in China. Finally, in term of the type of research design and research participant/sample, most of the included studies undertaken their research using the sample of accident data cases which been categorised as the case series research design. This data can be accessed or provided by the authorities or other related bodies.

Based on this review, it can be concluded that drink drive is one of the critical topics as factors leading to road accident. This topic also among the common research area that been studies by scholar not only within the Asian region but also all around the world. Due to this facts, it is suggested to any future researchers who are interested to undertake this study to explore more on this area, not only on the impact of drink drive toward road accident but also looking on the effectiveness of the legal enforcement that been established by the government to curb this issue. Subsequently, from this review, it can be identified that most of the included studies using the research design of case series to summarized the accident leading factors. Thus, it is suggested to the other researchers to use face to face interview because this method will help the researchers to gathered even richer information. The drivers’ perception toward road accident issue indeed crucial because they are the one who really know what is the best solution which is applicable to them in order to avoid the incident of road accident. As a result, more comprehensive countermeasure can be outlined when all the related parties involved in resolving this issue.

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**Source of Funding:** Self source

**Ethical Clearance:** Done research committee
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