



## **EPIDEMIOLOGICAL STUDIES OF CAR ACCIDENT IN HIGH WAY TEHRAN-QAZVIN AT 2018**

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### **ABSTRACT**

**Introduction:** Despite considerable study given to health information of car accident in high way, the epidemiological aspects of trauma resulting from this them are not exactly understood inroad of Iran and other developing countries. The aim of this review was to study the epidemiological pattern and issues arising due to car accident in high way in Iran. **Material and method:** this is a cross-sectional study involves data from 800 drivers that car accident in high way Tehran-Qazvin at2018. Data collection for this study was collected by research man that attendance in where of accident with checked by police driving. Data collection accomplished by questioner have 3factors including: demographic factors, vehicle factors and weather ,road factors. **Results:** The risk of road car accidents due to sleepiness was increased by more than sevenfold (oddsratio 5. 2) in low alertness hours (2MN-7AM) compared to other time of day. The risk of car accidents due to sleepiness was decreased by 0.18-fold (odds ratio 0.31) in hours with maximum ofalertness (17PM-22MN) of circadian rhythm compared to other time of day.

**Conclusion:** The occurrence of road traffic accidents due to sleepiness has significant statistical relationswith driving during lowest point of alertness of circadian rhythm. The findings of the current study will be beneficial in car accident and its associated complications and hence will be vital for policy makers, health service managers and stakeholders.

**KEYWORDS:** Epidemiological Studies, car accident, Injuries, high way.

### **INTRODUCTION**

Context The injury's issue is one of the most important subjects in the field of health. This subject tends to serious socioeconomic and health problem in the world.<sup>[1]</sup> Injuries are the second major cause of mortality in Iran.<sup>[2,3]</sup> One of the major causes of injury in Iran is the trauma caused by traffic accidents.<sup>[4]</sup> Road traffic accidents are the most important causes of mortality and morbidity in the world.<sup>[5]</sup> It should also be stated that road traffic accidents happen more in developing countries rather than developed countries.<sup>[6]</sup> One such occurrence can be attributed to the factors such as the growing number of vehicles, changes in lifestyle, and high-risk behaviors.<sup>[6,7]</sup> Information regarding the distribution of injuries caused by an accident trauma can lead to appropriate decision making in the management of Red Crescent, emergency, and police forces. It must be said that although many studies have been published regarding the prevalence of a road traffic accident in different cities of Iran.<sup>[2]</sup> a lack of strong evidence in this

field has been felt. 2. Objectives Therefore, this systematic and meta-analysis study, with the aim of mapping the prevalence of accident trauma in Iran, has been done using the GIS model. 3. Evidence Acquisition 3.1. Search Strategy The literature on the accident trauma prevalence in Iran was acquired through international searching databases including PubMed, Scopus, Elsevier, Google Scholar, and Web of Science as well as Iranian scientific information database (SID), Health.barakatnks, MagIran and Iran Medex 1996 to 2018. Our last search was conducted on Aug 08, 2018. In order to search and include as many related studies as possible, we used the following terms: "road traffic accidents", "trauma", "accident", "prevalence", "injury", "traffic", and the name of the province of Iran. 3.2. Selection of Studies and Data Extraction Published studies were regarded as qualified for analysis if they met the following criteria: 1- studies with the entire text available in the Farsi or English language; 2- studies with a sample size of more than 70, and 3- studies that

reported the prevalence of accident trauma in Iran's province. Conversely, the following were excluded: 1- non English or Farsi full-text reports; 2- studies that were done on just accident trauma, and 3- articles with non-relevant titles. 3.3. Data Extraction All articles categorized as potentially relevant were reviewed separately by two of the authors (Mohammad Gholami-Fesharaki and Alireza Najimi-Varzaneh). They evaluated the relevance and eligibility of each report and summarized the following data using excel data sheets: first author's name, year of publication, year of study, sample size, percent of the male gender, and mean age of responder. The analysis was conducted according to the preferred reporting items for systematic reviews and metaanalysis (PRISMA).<sup>[8]</sup> In this study, for better data extractions, blinding in addition task separation.<sup>[9]</sup> were used. 3.3. Statistical Analysis In the current meta-analysis, the prevalence rate of road traffic accidents from each province of Iran was analyzed by the meta-command in the Stata software version 11 (StataCorp. 2009. Stata Statistical Software: Release 11.0 College Station, TX: StataCorp LP). Statistical tests of heterogeneity among the studies were carried out using the Q test ( $P < 0.10$ ) and I-squared statistics. According to the result of the heterogeneity test, we used fixed- or randomeffect models for determining the prevalence rate of accident trauma. In this study, due to the fact that some provinces have one or even no study, we use neighborhood provinces pooled Meta estimation for such a province. For example, for the province of Hormozgan, we pooled studies reported in Sistan and Baluchestan, Fars, and Kerman. This method was also used for the provinces with one published article. In such a province, the weight for this province was considered three times more than neighboring provinces. For example, in the Qom pooled Meta estimation the weight for the Qom study was three times more than Isfahan, Tehran, Semnan, and Markazi studies. In this study, work by Khorshidi et al.<sup>[10]</sup> and Rasouli et al.<sup>[11]</sup> due to a large sample size and distracting, pooled estimation toward these two studies were removed from the final meta-

analysis. In the current study, maps and figures indicating the geographical distribution of the prevalence of road traffic accidents and prevalence time trends were prepared by using the ArcGIS software Release 9.2 (ArcGIS, Redlands, CA. USA), and Microsoft Excel, respectively. 4. Results 4.1. Search Results and Study Selection The study selection process is depicted. A total of 2,200 studies were potentially associated with the prevalence of road traffic accidents in Iran's province, of which 380 duplicates were excluded. After reviewing the abstracts and titles, 1,722 studies were eliminated based on the stated inclusion and exclusion criteria. After the fulltext screening, a total of 70 records were deemed as eligible papers published between 1995 and 2018, however, in quality assessment 10 articles were also removed. Finally, 60 articles were reviewed and used in the meta-analysis study. 4.2. Prevalence of Accident Trauma in Iran's Provinces Data on the prevalence of road traffic accidents as well as other indicators like first author name, year of publish, year of study, mean age, and male percent of each study were presented in Table 1. In addition, the pooled prevalence of road traffic accidents, according to the 31 prevalence of Iran, was presented in Table 2 and Figure 2. Overall, the prevalence of accident trauma in Iran was estimated as 51.50% (95% CI = 50.6% - 52.3%). The highest pooled road traffic accidents rate related to the province of Guilan (79.80% [95% CI = 79.1% - 80.5%]), while the lowest pooled accident trauma rate was in the Fars province with the rates of 27.50% (95% CI = 26.3% - 28.8%). The GIS map of the prevalence of road traffic accidents was presented in Figure 3. More results showed that 73.09% (95% CI = 73.04% - 76.13%) of road traffic accidents occurred in males. The result of the pooled prevalence of road traffic accidents during time was presented in Table 3 and Figure 4. As it is shown, in this table and figure, a descending of prevalence trend rate was observed during the year 2000 until the year 2010 (53.30% → 46.90%), while after the year 2010 this trend was increasing (46.90% → 52.50%).

## FINDING

**Table 1: The role of the human factor in the probability of mortality.**

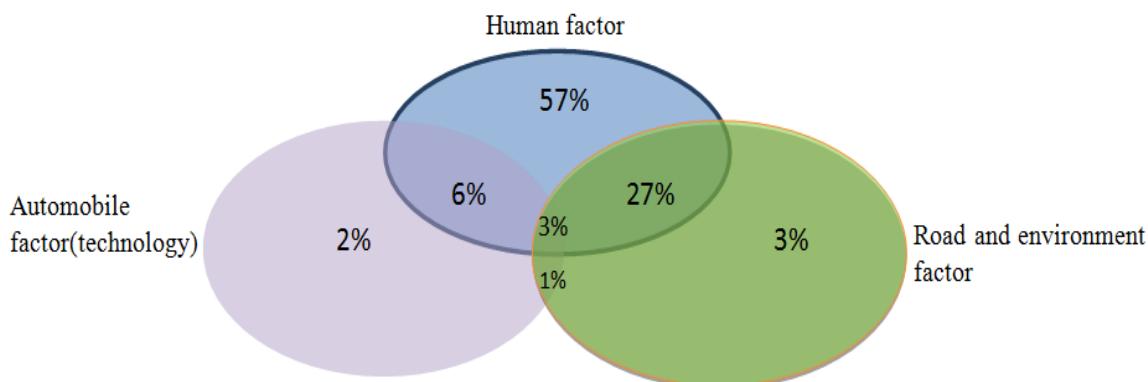
Human influencing factors	Probability of death
Weakness due to old age	16%
Fatigue and drowsiness	84%
Intentional violation	76%
Not familiar with the road	14%
Unnecessary haste and acceleration	35%
Max: Fatigue and drowsiness (84%)	
Min: Not familiar with the road (14%)	

**Table 2: Line status and probability of accident severity.**

Line drawing status		The probability of the severity of the accident	
situation	The probability of the severity of the accident Immobility of the car	The probability of the severity of the accident Injury to the driver	
Unsuitable	36%	23%	
does not have	38%	33%	

**Table 3: Dangerous vehicles based on the probability of the driver dying.**

<b>car</b>	<b>Probability of death in the event of an accident</b>
pride	86%
Peugeot 405	77%
samand	68%
PARS Peugeot	65%
Peugeot 206	58%
Peykan	11%
Minibus	0/07%
bus	0/06%
Foreign brand cars (Kia, Hyundai, Benz, BMW, etc.)	0/0012%
Max	Pride (86%)
Min	Foreign brand cars(0/0012%)

**Table 4: The role of effective factors in accidents.****Chart 4 – The roles of each of effective factors based on ITE studies in 2004.**

## DISCUSSION

Review of the prevalence of road traffic accidents showed two population base studies in Iran. Work by Khorshidi et al.<sup>[10]</sup> and Rasouli et al.<sup>[11]</sup> in the year 2011, showed 52% and 32% prevalence of accident trauma in Iran. Given that both studies were done in the same year, it was expected that these two prevalence would be close together, however, it did not happen. The results of this study showed that the pooled prevalence estimation of road traffic accidents in Iran was 51.50% (95% CI = 50.6% - 52.3%). The result of this study was close road traffic accidents to the Khorshidi et al. study.<sup>[10]</sup> The further result showed the prevalence of decrease from north to south of Iran. Therefore, the highest pooled road traffic accidents rate was related to the province of Guilan (79.80% [95% CI = 79.1% - 80.5%]), while the lowest pooled road traffic accidents rate was in the Fars province with the rates of 27.50% (95% CI = 26.3% - 28.8%). This result, with a little difference, is similar to the Alizadeh et al. study.<sup>[4]</sup> The result of the pooled prevalence of road traffic accidents showed that a descending of prevalence trend rate was observed during the year 2000 until the year 2010 (53.30% → 46.90%), while after the year 2010 this trend was increasing (46.90% → 52.50%). Such a trend has been seen in the Alizadeh et al. study.<sup>[4]</sup> A number of limitations exist in the present investigation that should be noted. First, the sample size for some.

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