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# Road Traffic Fatalities in Babylon Province – Six Years Epidemiologic Study

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## Abstract

Road Traffic Accidents are the fifth leading cause of morbidity and mortality worldwide. In Iraq, traffic accidents are increasing continuously leading to more fatalities that rank Iraq as number four in in the world. **Objectives:** To assess the epidemiological features of fatal Road Traffic Accidents in a time, place, person epidemiologic model and to identify the trend of Road Traffic mortalities in Babylon - province during six years. This was a descriptive cross-sectional study included a analysis of the forensic medicine data presented in the records of forensic medicine department in Babylon Health directorate for the period 2010-2015. After the approval of the study protocol by the local health ethical committees , a structured questionnaire was used to collect data according to the descriptive epidemiologic model (person , place, time model). During the period 2010-2015 mortality rates were higher in males than females with male to female ratio of 3:1 Higher mortality rates reported in the year 2015 and the highest frequency of mortality was in the age group (16-35)years (34.9%) followed by the age group (6-15)years (14.7%) the lowest rate was among the age group(46-55) years , the highest mortalities reported among Wage earners (58.8%).

***Key words:*** *Road Traffic Fatalities, Babylon Province, Epidemiologic Study*

## Introduction

Globally, Road Traffic Injuries (RTIs) have increased in the last twenty years, this makes RTIs one of the main five causes of morbidity and major cause of fatality all over the world particularly in the low- and middle-income countries[1]. The RTA is defined as any vehicle accident occurring on a public road or highway and includes accidents where the place of occurrence is unspecified[2]. The growth in the global economy in the last century has changed many aspects of people's lives including their use of various means of transportation, this leads to a corresponding increase in the number of automobiles usually resulting in an increase in RTAs and consequent injuries and deaths [3,4]. The overall global RTIs fatality rate estimated to be 19.5 per 100 000 population, middle-income countries have the highest annual road traffic fatality rates, at 20.1 per 100 000, while the rate in high-income countries is the lowest, at 8.7 per 100 000 . There is a wide variety in road traffic death rates in different regions of the world; the highest rate was reported in African regions, 24.1 per 100 000 and lowest in the European Region 10.3 per 100 000. Also, there is a considerable disparity within each region [5]. In the Eastern Mediterranean Region, one of the major challenges to the region is the constantly increasing incidence of RTIs [6]. This region has one of the world's highest traffic fatality rates, mostly due to a lack of simple measures to reduce RTIs [7] and inadequate pre-hospital medical emergency systems [8]. The available data referred to different death rates due RTIs in some Arab and regional countries; moderate to high fatality rates reported in United Arab Emirates 9, Saudi Arabia 10 and Kuwait [11]. However, road traffic injury fatality rates range from 9 in Turkey to 44.75 per 100 000 population in Iraq [12]. In Iraq, traffic accidents are increasing continuously leading to more fatalities [13]. According to the WHO data about Iraq, road traffic fatality rate is preceded only by Namibia , Swaziland and Malawi [5,12]. It is worth mentioning that in 2011 the injury toll from RTIs is almost four times greater than that from acts of terrorism in Iraq [14]. According to the agreement between Iraq and WHO, the Ministry of Health and the Ministry of Interior with the full cooperation of the WHO, Iraq launches the Decade of Action for Road Safety 2011-2020 and pledges to reduce

the level of road traffic fatalities by 2020. [14] Accidents, therefore, can be studied in terms of agent, host and environmental factors and epidemiologically classified into time, place and person distribution [15,16]. Previous studies referred that majority of the victims are within the age15 to 50 years, furthermore, children account for approximately 13% of fatalities. The main victims of RTIs are males. [15-18] The global burden of morbidity is estimated that around 20 to 50 million individuals are being injured or disabled each year with considerable social and economic losses [19,20]. One million and three hundred thousand deaths are reported globally each year [21] . The World Health Organization stated that without efforts to prevent these accidents, it is predicted that 1.9 million person in the world die annually by 2020 more than 90% of deaths due to traffic injuries occur in low-and middle-income countries including Iraq [21,32]. In1990, road accidents ranked 9th in the list of the most important factors threatening the health of the community but it is predicted that by 2020 they will rank the third cause of mortality . Another bitter fact about these reports is that 50% of the killed are individuals with a role in the economic development of societies [24]. The frequencies of road accidents are rising in developing countries and are higher compared to( those in developed countries [25] According to World Health Organization , the average standardized annual death rate due to road traffic accidents in Iraq is) 44 per 1000000 population) and this is ranking Iraq as number 4 in the world [26,27]. Because pre hospital transit times are long, most trauma deaths in these countries occur during the pre-hospital phase; hence efforts to improve survival rates should focus on better care outside the hospital [28].

**Objectives of the study:**

- To assess the epidemiological features of fatal RTIs in a time place person model in Babylon province.
- To identify the epidemiological trend of RTI mortalities in the province.

## Methodology

The study protocol was approved by the ethical committee in Hammurabi college of medicine University of Babylon. The acceptance of ethical committee of Babel health directorate was taken as well . This was a cross-sectional descriptive study depended on a retrospective analysis of RTIs mortalities that were recorded in the forensic medicine department for the years 2010 – 2014.The time needed to conduct this study from 1st of February to end of May 2016. Data for the five years were reviewed by the researchers . The data for each victim include, age, gender, occupation, marital status and residence of the victims, in addition to the place of accident, date of accident (in day and month) and the site of injury in the body. Statistical analysis was done using Spss version 17 to calculate the Chi square test to evaluate the significant of difference between variables , $P<0.05$ considered as the statistical significant level..

## Results and Discusion

Table (1) shows the distribution of mortalities for the six years according to gender, higher number of mortalities was reported among males at each year and over the whole period; out of the 2340 mortalities, males constituted 1791 (76.5%) while females were 549 (23.5%) with a male to female ratio of (3:1).

**Table 1. Distribution of (R.T.A) deaths in Babylon province for the years (2010_2015)**

| **Year** | **Male** | % | Female | % | Total | % |
|---|---|---|---|---|---|---|
| 2010 | 268 | (76.1) | 84 | (23.9) | 352 | ( 100 ) |
| 2011 | 298 | (75.3) | 98 | (24.7) | 396 | ( 100 ) |
| 2012 | 350 | (79.4) | 91 | (20.6) | 441 | ( 100 ) |
| 2013 | 251 | (75.1) | 83 | (24.9) | 334 | ( 100 ) |
| 2014 | 239 | (75.9) | 76 | (24.1) | 315 | ( 100 ) |
| 2015 | 385 | (76.6) | 117 | (23.4) | 502 | ( 100 ) |
| Total | 1791 | (76.5) | 549 | (23.5) | 2340 | ( 100 ) |

Table (2) show the higher overall number of mortalities due to road traffic injuries was in the age group (26-35) years (17.8%) , age group (16-25) years (17.1%) and theage (6-15)years (14.7%) .

**Table 2. Distribution of death according to age For the years (2010 – 2015) in Babylon province**

| **Age** | **No.** | ( % ) |
|---|---|---|
| 1-5 Years | 275 | (11.7) |
| 6-15 Years | 344 | (14.7) |
| 16-25 Years | 401 | (17.1) |
| 26-35 Years | 417 | (17.8) |
| 36-45 Years | 321 | (13.7) |
| 46-55 Years | 167 | (7.1) |
| 56-65 Years | 205 | (8.7) |
| >65 | 210 | (8.9) |
| Total | 2340 | 100 |

Table (3) shows the total mortalities reported during the 6 years were higher Wage nearer, (58.8%), followed by employed (21.1%), students (14.1%) .

**Table 3. Distribution of RTA death according to the occupation of victims**

| **accusation** | Total | ( % ) |
|---|---|---|
| Wage earner | 1371 | (58.8) |
| Employee | 495 | (21.1) |
| Student | 333 | (14.1) |
| Retired | 94 | (4) |
| Others | 47 | (2) |
| Total | 2340 | 100 |

Table (4) demonstrates the total reported deaths due to all causes during the period 2010-2015 were 7527 deaths. Deaths due to Road Traffic Accidents account for 2340 deaths giving an overall Proportional Mortality ratio of 31.1%. Moreover the higher Proportional Mortality ratio, (48.6%), was reported in the year 2012, and the lower ratio of (21.1%) was reported in the year 2014.

**Table 4. proportional mortality ratios of (R.T.A) in Babylon for the years (2010_2015)**

| **Year** | **Total deaths** | **R.T.A Deaths** | **( % ) Mortality ratio** |
|---|---|---|---|
| 2010 | 1098 | 352 | (32.1) |
| 2011 | 1190 | 396 | (33.3) |
| 2012 | 908 | 441 | (48.6) |
| 2013 | 1287 | 334 | (26) |
| 2014 | 1492 | 315 | (21.1) |
| 2015 | 1552 | 502 | (32.3) |
| Total | 7527 | 2340 | (31.1) |

**Table (5) Proportional mortality Death of road accidents in Babylon for the years (2010_2015)**

| Year | Population | Death of road accidents | Ratio % |
|---|---|---|---|
| 2010 | 1700000 | 352 | (20.7) |
| 2011 | 1800000 | 396 | (22) |
| 2012 | 1850000 | 441 | (23.8) |
| 2013 | 1900000 | 334 | (17.5) |
| 2014 | 1950000 | 315 | (16.1) |
| 2015 | 2000000 | 502 | (25.1) |

In Iraq, there are lacking in the reliable data on the incidence of RTIs, nonetheless, it is one of the public health priority of Iraq that will need to be investigated [21,22]. Analysis of these data revealed that the total mortalities for six years period in Babylon province years were 2340 victims with male predominance this finding is similar to the finding reported by other study [23], on the other hand it had been noticed that the death numbers increased during the years 2011 and 2012 then declined in the next two years, this decline in the trend of mortalities might be attributed to the increase of the public and the drivers awareness about the traffic safety and the monitoring program applied according to the agreement between Iraq and WHO, where, Iraq launches the Decade of Action for Road Safety 2011-2020 and pledges to reduce the level of road traffic fatalities by 2020 towards achieving the objectives of the decade at the national and international levels, additionally, the traffic police in last three years enforced in some areas of Iraq the use of seatbelt, helmet, and having driving license particularly in the safe zones of Iraq. Despite this decline reported in the current study, the death numbers still higher than what were reported in neighboring countries such as Saudi Arabia, and Iran [26]. This study showed that more than half of the victim's lives in urban areas, higher proportion of victims were unemployed and the majority of deaths occurred on the main roads, which consistent with other studies [2]. The high rate of deaths in the current study might be attributed to different factors such as no speed limit on the roads in urban areas and inside the cities, crowded roads, presence of different types of vehicles (two wheels, three wheels and four wheels vehicles), absence of road signs, additionally, other possible reasons for the higher RTI related fatalities such as insufficient government policies that promote cycling, walking and investing in public transport as it found in some countries in the region, lack of education about the safety measures, like seat belt, helmets and periodic safety check for the vehicles. The highest death rate was noticed in December, almost, similar finding was reported in previous Iraqi study, however, this might be due to cold or rainy weathers as in December. The current study found that head was the dominant site of injuries among victims, during the whole period which account for 93.7%, followed by lower limbs and upper limbs.

## Conclusion

Most fatalities occurred among males, in their productive age group and among wage earners, the highest rates of deaths occur during December . Head and lower limbs were the commonest sites of injuries.

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**Conflict of Interest:** None to declare.

**Ethical Clearance:** All experimental protocols were approved under the University of Babylon /Hammurabi College of Medicine, Iraq and all experiments were carried out in accordance with approved guidelines.

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