**Road Traffic Accidents as a burden on emergency department, in Missan ,Iraq**

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Abstract:

A three year retrospective study for patients suffered from road traffic accidents using records of the road traffic accidents in the emergency department, the study reveals that road traffic accidents affect patients in the middle age, males are predominant than females, the study shows there is tendency of the road traffic accidents to be more common during summer time.

Motor cycles contribute to more than half of the cases of the road traffic accidents, during certain time of the year.

In conclusion, strong legislations are required to regulate the use of the motorized vehicles (cars, motor cycles) and to establish effective system to control safety measure for road users.

**Introduction**

Injury has been described as “the last major plague of the young”[1]. Traffic injury alone was the major killer and responsible for more than half of the total accidental deaths in adolescents and young adults , [2,3,4,5,6,7,8,9]. 74% of the estimated road deaths occurring annually worldwide, are in developing countries[10]. In this study we try to verify the size of the problem of road traffic accidents as a burden on causality and emergency department in the region of Amara city, Iraq.

Objectives of the study:

1. Study various features of the road traffic accidents in Missan.
2. Asses the burden of the road traffic accidents on emergency facilities in this area.
3. Identify the factors that may reduce the effects of the road traffic accidents on the community.

**Patients and methods:**

This is a retrospective study done at Al-Zahrawi surgical hospital ;in Missan, Iraq.

Missan is one million population governorate in the south of Iraq, in the city center two major hospitals which receive trauma patients, Al-Zahrawi surgical hospital is the only orthopedic center and a major trauma center in this governorate. So the data obtained from this hospital about road traffic accidents may reflect a very good picture about the size and features of this problem.

Data collected from the records of traumatic admissions to the emergency department for the last three years.

Data concerning road traffic accident patients were analyzed regarding their demographic features, distribution of road traffic accidents during different months of the year, and mechanism of these road traffic accidents.

**Results:**

During the periods of three years from 1st of January 2014 to 31st of December 2016, 66912 patients were admitted to the emergency department of Al – Zahrawi surgical hospital in Missan, 8527 patients suffered from road traffic accidents contribute to 12% - 13.9% causality rate per year [tables 1,2,3] and this represents a considerable burden on emergency department.

The study shows that the main age group affected by the road traffic accidents are the age between 10 -39 years. Whereas old age more than 60 years age are the least likely affected. An important point to be noticed, children below 10 years represent a big bulk of patients affected by the road traffic accidents (about 15%-16%) [table 4,5].

Males are more commonly affected than female through out all age groups, with over all male to female ratio of 3.4\1 to 3.6\1 and this ratio may be higher especially for young adult from the age 20 - 39 years age (about 6.68\1 to 6.9\1) [table 4,5].This is may be attributed to the fact that the males are more exposed to the road traffic accidents, for social factor, also male drivers are predominant for the same reason.

Seasonal variation shows that maximum causalities are seen from June to November [table 6] this can be explained by increased outdoor activities during this period which makes exposure to accidents more common as compared to cold season.

Regarding the mechanism of the road traffic accidents ,the study classifies the road traffic accidents into two main categories, the first includes the road traffic accidents that occur due to car user accidents ; including drivers, occupants or pedestrians (because the hospital records does not differentiate between these categories), the second category includes the road traffic accidents that occur due to motor cycle accidents (including two wheeled or three wheeled motor cycles ).

Motor cycles represent an important bulk of road traffic accidents ranges from (21.7% - 56.6%) [table 7]. This may be attributed to the following reasons.

1. There is no strong legal regulations in Iraq that regulates driving motor cycles ( tow wheeled or three wheeled), including registration and driving license ; so you may see very young driver with no experience in using road safely ;driving these vehicles which is a very serious situation.
2. Relatively low price of these motor cycles makes it is easy to have these vehicle; in addition to be a cheap transport vehicle.

**Table 1. Emergency causalities during the year 2014**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Trauma to the trunk\*** | **Trauma to limbs\*** | **Civilian bullet** | | **road traffic accidents** | | **Month** |
| Shale | Bullet | Motor cycle | Car user |
| 607 | 613 | 1 | 19 | 94 | 111 | **Jan.** |
| 800 | 770 | 2 | 35 | 84 | 126 | **Feb.** |
| 786 | 750 | 2 | 25 | 78 | 145 | **Mars** |
| 1019 | 912 | 3 | 18 | 66 | 129 | **April** |
| 1040 | 761 | 0 | 29 | 83 | 109 | **May** |
| 972 | 618 | 0 | 28 | 95 | 154 | **June** |
| 925 | 803 | 2 | 16 | 123 | 138 | **July** |
| 860 | 781 | 1 | 34 | 150 | 115 | **August** |
| 930 | 922 | 0 | 21 | 139 | 167 | **September** |
| 1190 | 724 | 3 | 23 | 99 | 131 | **October** |
| 640 | 593 | 2 | 36 | 53 | 172 | **November** |
| 484 | 722 | 0 | 16 | 82 | 145 | **December** |
| 10253 (45.9%) | 8969 (40.2%) | 316 (1.4%) | | 2788 (12.5%) | | **Total** |
| 22326 (100%) | | | | | | |

\*Trauma other than road traffic accidents.

**Table 2. Emergency causalities during the year 2015**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Trauma to the trunk\*** | **Trauma to limbs\*** | **Civilian bullet** | | **road traffic accidents** | | **Month** |
| Shale | Bullet | Motor cycle | Car user |
| 506 | 519 | - | 24 | 64 | 139 | **Jan.** |
| 565 | 610 | 2 | 20 | 63 | 181 | **Feb.** |
| 602 | 644 | 2 | 40 | 58 | 132 | **Mars** |
| 687 | 729 | 4 | 25 | 79 | 151 | **April** |
| 624 | 724 | 1 | 31 | 67 | 161 | **May** |
| 593 | 708 | 4 | 29 | 57 | 204 | **June** |
| 751 | 855 | 4 | 37 | 119 | 166 | **July** |
| 738 | 1125 | 1 | 30 | 114 | 186 | **August** |
| 778 | 1290 | 2 | 17 | 111 | 155 | **September** |
| 1141 | 1231 | 1 | 27 | 88 | 135 | **October** |
| 640 | 687 | 3 | 27 | 67 | 183 | **November** |
| 658 | 597 | 1 | 25 | 76 | 191 | **December** |
| 8283 (38.8%) | 9719 (45.6%) | 357 (1.7%) | | 2947 (13.9%) | | **Total** |
| 21306 (100%) | | | | | | |

\* Trauma other than road traffic accidents.

**Table 3. Emergency causalities during the year 2016**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Trauma to the trunk\*** | **Trauma to limbs\*** | **Civilian bullet** | | **road traffic accidents** | | **Month** |
| Shale | Bullet | Motor cycle | Car user |
| 520 | 604 | 2 | 23 | 81 | 118 | **Jan.** |
| 737 | 778 | 3 | 14 | 100 | 124 | **Feb.** |
| 730 | 768 | 1 | 28 | 68 | 156 | **Mars** |
| 1420 | 904 | 2 | 28 | 80 | 139 | **April** |
| 1281 | 776 | - | 35 | 62 | 118 | **May** |
| 1135 | 664 | - | 19 | 81 | 145 | **June** |
| 931 | 858 | - | 18 | 103 | 129 | **July** |
| 911 | 828 | 2 | 25 | 131 | 125 | **August** |
| 1048 | 972 | - | 27 | 98 | 191 | **September** |
| 1151 | 743 | - | 23 | 115 | 169 | **October** |
| 549 | 582 | 4 | 28 | 43 | 155 | **November** |
| 599 | 695 | - | 22 | 95 | 166 | **December** |
| 11012 (47.3%) | 9172 (39.4%) | 304 (1.3%) | | 2792 (12%) | | **Total** |
| 23280 (100%) | | | | | | |

\* Trauma other than road traffic accidents.

**Table 4. Age, sex distribution of RTA\* causalities during 2015\*\***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | |
|  | **Total** | | **M\F (ratio)** | **Female** | **Male** | **Age (years)** |
| 453(15%) | | 2.65\1 | 124 (27.3%) | 329(72.7%) | **0-9** |
|  | **709(24%)** | | 2.8\1 | 186(26.2%) | 523 (73.8%) | **10-19** |
|  | **721 (25%)** | | 6.67\1 | 94(13%) | 627(87%) | **20-29** |
|  | **594(20%)** | | 6.9\1 | 75 (12.6%) | 519(87.4%) | **30-39** |
|  | 193(7%) | | 1.6\1 | 74 (38.4%) | 119(61.6%) | **40-49** |
|  | 152(5%) | | 1.5\1 | 61(40%) | 91(60%) | **50-59** |
|  | 125(4%) | | 1.5\1 | 50(40%) | 75(60%) | **60>** |
|  | **2947(100%)** | **Total** | | | | |

RTA: Road traffic accidents

\*\* Data about age ,sex distribution for the year 2014 was incomplete, so it have been excluded.

**Table 5. Age, sex distribution of RTA causalities during 2016**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Total** | **M\F (ratio)** | | **Female** | **Male** | **Age (years)** |
| 442(16%) | 1.98\1 | | 148 (33.5%) | 294 (66.5%) | **0-9** |
|  | **728(26%)** | 4.4\1 | | 135 (18.5%) | 593(81.5%) | **10-19** |
|  | **676(24%)** | 6.68\1 | | 88(13%) | 588 (87%) | **20-29** |
|  | **539(19%)** | 6.38\1 | | 73 (13.5%) | 466(86.5%) | **30-39** |
|  | 171(6%) | 1.7\1 | | 63 (36.8%) | 108(63.2%) | **40-49** |
|  | 125(5%) | 1.55\1 | | 49 (39.2%) | 76 (60.8%) | **50-59** |
|  | 111(4%) | 1.17\1 | | 51 (45.9%) | 60 (54.1%) | **60>** |
|  | **2792(100%)** | | **Total** | | | |

**Table 6. Seasonal distribution of RTA causalities**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RTA 2016** | | **RTA 2015** | | **RTA 2014** | | **Month** |
| % | No. | % | No. | % | No. |
| 7.1 | 199 | 6.9 | 203 | 7.4 | 205 | **Jan.** |
| 8 | 224 | 8.3 | 244 | 7.5 | 210 | **Feb.** |
| 8 | 224 | 6.4 | 190 | 8 | 223 | **Mars** |
| 7.8 | 219 | 7.8 | 230 | 7 | 195 | **April** |
| 6.4 | 180 | 7.7 | 228 | 6.9 | 192 | **May** |
| 8.1 | 226 | 8.9 | 261 | 8.9 | 249 | **June** |
| 8.3 | 232 | 9.7 | 285 | 9.4 | 261 | **July** |
| 9.2 | 256 | 10.2 | 300 | 9.5 | 265 | **August** |
| 10.4 | 289 | 9 | 266 | 11 | 306 | **Sep.** |
| 10.2 | 284 | 7.6 | 223 | 8.2 | 230 | **October** |
| 7.1 | 198 | 8.5 | 250 | 8.1 | 225 | **Nov.** |
| 9.4 | 261 | 9 | 267 | 8.1 | 227 | **Dec.** |
| 2792 (100%) | | 2947 (100%) | | 2788 (100%) | | **Total** |

**Table 7. Mechanism of the road traffic accidents**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RTA 2016** | | **RTA 2015** | | **RTA 2014** | | **Month** |
| Motor cycle | Car user | Motor cycle | Car user | Motor cycle | Car user |
| 81(40.7%) | 118(59.3%) | 64 (31.6%) | 139 (68.5%) | 94(45.9%) | 111(54.1%) | **Jan.** |
| 100(44.6%) | 124(55.4%) | 63 (25.8%) | 181 (74.2%) | 84(40%) | 126(60%) | **Feb.** |
| 68(30.4%) | 156(69.6%) | 58 (30.5%) | 132 (69.5%) | 78(34.9%) | 145(65.1%) | **Mars** |
| 80(36.5%) | 139(63.5%) | 79 (34.4%) | 151 (65.6%) | 66(33.8%) | 129(66.2%) | **April** |
| 62(34.4%) | 118(65.6%) | 67 (29.4%) | 161 (70.4%) | 83(43.2%) | 109(56.8%) | **May** |
| 81(35.8%) | 145(64.2%) | 57 (21.8%) | 204 (78.2%) | 95(38.2%) | 154(61.8%) | **June** |
| 103(44.4%) | 129(55.6%) | 119 (41.8%) | 166 (58.2%) | 123(47.1%) | 138(52.9%) | **July** |
| 131(51.2%) | 125(48.8%) | 114 (38%) | 186 (62%) | 150(56.6%) | 115(43.4%) | **August** |
| 98(33.9%) | 191(66.1%) | 111 (41.7%) | 155 (58.3%) | 139(45.4%) | 167(54.6%) | **September** |
| 115(40.5%) | 169(59.5%) | 88 (39.5%) | 135 (60.5%) | 99(43%) | 131(57%) | **October** |
| 43(21.7%) | 155(78.3%) | 67 (26.8%) | 183 (73.2%) | 53(23.6%) | 172(76.4%) | **November** |
| 95(36.4%) | 166(63.6%) | 7 (28.5%) | 191 (71.5%) | 82(36.1%) | 145(63.9%) | **December** |
| **1057 (37.9%)** | **1735 (62.1%)** | **963 (32.7%)** | **1984 (67.3%)** | **1146 (41.1%)** | **1642 (58.9%)** | **Total** |
| 2792 | | 2947 | | 2788 | |  |

**Discussion:**

Since 2003, tremendous changes occurred in Iraq including the number and types of the cars, motorcycles which are increased in rapid pattern, and this have been reflected on the number of road traffic accidents and increase the burden on emergency department in our hospitals.

Regarding the age, road traffic accidents are commonly seen in middle age (2nd- 4th ) decades of life who are active age group in the community, and this should give us a hint for seriousness of the problem and enforce us to work hardly to find solutions to solve this problem actively and restore the active working power of our community. In Libya, a similar figure may be seen, Mekky et al, shows that road traffic accidents affects patients aged (20-24 years age) three times more than other age groups [11].

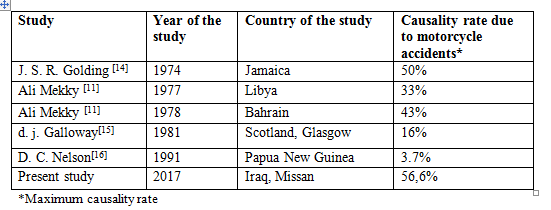
The study shows that the males are affected by road traffic accidents three to four folds more than the females, because males are involved in outdoor activities more than females for social factors in our community, also male drivers are more common than female drivers for the same causes ,the figure for Kuwait as done by Ahmed Bayoumi et al, males constitute (84.2%) of victims of fatal road traffic accidents whereas females represent only (15.8%) of victims [12]. Other study done in Qatar shows that males represent (90.2% - 93.4%) of victims of all road traffic accidents [13].

Seasonal variation in the road traffic accidents is less clearly observed in this study, with slightly increased risk during summer months than other time of the year which may be explained by the increased outdoor activities during summer period than other time of the year, in a study from Qatar, they show that the road traffic accidents diminish during April, May and June, and to reach their highest incidence during the Summer months (July, August and September) of each year and the road traffic casualties had more or less a similar pattern [13].

Motor cycle accidents represents a major bulk of emergency causalities in our study which approximates more than 50% of road traffic causalities during Summer period, a similar picture is seen in Jamaica (where the number of motor vehicle accidents attributed to motor cycles is almost half of the total motor vehicle accidents) [14], whereas the picture for other countries is less sever, for Libya, motor cycle accidents represents 33%, for Bahrain 43% [11], a different picture may be seen in developed countries as in Scotland where the motor cycle contribute for 16% of road traffic causalities , for Papua New Guinea an odd picture may be seen as the motor cycle causalities contribute to about 3.7% of the road traffic accidents causalities; this figure may be explained by the fact that people there, they do not prefer the motor cycle for their transportation [table 8].

For this reason, in our country, a strong legislation for motor cycle use should be established for both safety measures for motor cycle drivers, and those legislation that ensure safety measures for other road users from these motor cycle accidents.

**Table 8: The motorcycle accidents contribution in road traffic accidents causalities in different studies**



In this study the causality rate for the road traffic accidents was in the rate of 12% - 13.9% of the total causalities, this represent a lower rate as seen in nearby countries as in Kuwait where the road traffic accidents causalities represent 31.7% of all causalities [11]. But still this percentage represent a considerable burden on emergency facilities in our hospitals.

**Conclusions:**

1. Road traffic accidents represent an important bulk on emergency causalities, even it is less than nearby countries, and these induce a burden on emergency facilities in our hospitals.
2. Motor cycle accidents contribute to about half of the cases of road traffic accidents causalities in these hospitals.
3. Establishment of strong legislations for road users (car users , motor cycle users) is an important step to control road traffic accidents.
4. Improvement of safety measures on the roads is another important factor to reduce road traffic accidents.

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**حوادث السير و تا ثيرها على الخدمات المقدمة في ردهات الطوارئ**

الخلاصة:

دراسة استرجاعية عتى مدى ثلاث سنوات (2014- 2016) اجريت في قسم الطوارئ , باستخدام المعلومات المسجلة للمرضى المصابين في حوادث السير .

بينت الدراسة ان حوادث السير تحصل بنسبة اكبر للمرضى في اواسط العمر (فئة الشباب) و كان المرضى الذكور هم النسبة الاكبر من المرضى الاناث و لمختلف الفئات العمرية.

كما بينت الدراسة ان حوادث السير تميل للحصول بشكل اكبر خلال موسم الصيف ؛ كما بينت الدراسة ان الحوادث الناتجة بسبب الدراجات النارية ( ثنائية العجلات – ثلاثية العجلات) كان السبب في اكثر من نصف الحوادث (خاصة خلال اشهر معينة في السنة) .

لذلك فقد بينت الدراسة ان سن قوانين صارمة لتنظيم قيادة السيارات و الدراجات النارية و كذلك انشاء نظام لأداره اجراءات السلامة في الطريق هو من اهم الاجراءات التي تساعد على الحد من الاصابات في حوادث السير.