Epidemiology of Road Traffic Injuries in Qassim Region, Saudi Arabia: Consistency of Police and Health Data

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Abstract:

Introduction: In Saudi Arabia, road traffic accidents (RTA) are becoming a serious public health problem. Police reports are designed for legal purposes with very little information on the health consequences. Also, health system data include detailed health information, but not related or linked to the data obtained police reports. Examining the consistency of these sources is vital to build an accurate surveillance system that can track the risk factors and the health consequences, as well as establishing and evaluating prevention interventions.

Objectives: This study is intended to:

- Examine the consistency of health- registration data with the data gathered by the traffic police department.
- Elucidate the magnitude, risk factors and outcome of RTI in Qassim region of Saudi Arabia,
- Compare the pattern of accidents in Qassim with those at different regions of the Kingdom.

Methodology: Health care information was collected on visits of victims of road traffic accidents to emergency and outpatients' departments of the major hospitals in Qassim region during the year 2010. The information included the patients' demographics, and clinical characteristics. Traffic Police Department information was also collected on all accidents that occurred in the study region. A Questionnaire was also developed and pilot tested to collect data from a random sample of population attending hospital outpatient and Primary Health Care clinics. Data included previous involvement in road traffic accident, and information about any injury; fatality or disability due to these RTI.

Results: During the study period, road traffic death rate based on death registration data was almost twice as high as the rate reported by the police ($P < 0.05$).
There was also a significant decline of 27% according to police-reported data during the study period, as opposed to a non-significant increase of 8% according to health registration data during the same period.

Population Survey Information showed the overall age-sex-adjusted rate for non-fatal RTI was 20.7 (95% CI, 20.0 - 21.3)/100 persons/ year. The rate for non-fatal RTI is higher in the 10-19 years age group (17.3%). Males had twice or more incidence rate for RTI requiring recovery period of ≤ 7 days as compared with females, however, RTI incidence for recovery period of >7 days is more than twice in females**..** Also a total of 12 deaths due to RTI were reported in 5-49 years age group in the last 3 years, representing an estimated annual RTI mortality rate of 35.4/100,000 (95% CI 16.6 - 57.8). A total of 11 participants reported RTI related disability in the last 3 years representing an estimated annual RTI disability rate of 34.1/100,000 population (95% CI 11.4 - 55.7).

Reports of the Traffic Police Department showed that 18623 accidents occurred throughout the year 2010. These accidents involved 23178 persons, and resulted in the injury of 2025 people and the deaths of 369. In contrast, the health system reports showed that 4232 people had been injured and 1054 had died.

Comparison with local & Arab Rates showed that Qassim is among the highest 5 regions in the kingdom regarding the number of RTA Saudi Arabia is also having a very high level of road traffic accidents and fatalities compared to other Arab countries.

Conclusion:
RTI are responsible for significant loss of life, disability and injury in Qassim population and in Saudi Arabia. The inconsistency between police-reported data and health system data strongly suggests that active efforts to audit and monitor data quality are clearly necessary.

Key words: RTA, Epidemiology, Qassim, KSA

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Introduction

Road traffic injuries (RTI) are a major public health problem worldwide and a major cause of death and disability. [1] Furthermore, according to the World Health Organization, the number of road traffic deaths is expected to increase by 80% from 2000 to 2020. [1, 2]

Globally, road traffic injuries are ranked ninth among the leading causes of disability adjusted life years lost, and their ranking is projected to rise to third by 2020. Moreover, 96% of all children killed worldwide are due to road traffic accidents. [3, 4]

The problem is increasing at a fast rate in developing countries due to rapid motorization and other factors. Road traffic injuries in developing countries particularly affect the productive age group (15-44 years) and children among whom the fatality rates are especially high. With incomplete, little or no data available from countries with higher RTI mortality rates, there is also a suggestion that the present global RTI burden is underestimated. [5, 6]

In Saudi Arabia, with its rapid expansion of road construction and increase in the number of vehicles, road traffic accidents are becoming a serious public health problem. The ensuing trauma has increased in direct proportion to the increase in the number of road vehicles. Mortality rates have also increased substantially since 1990 due to road traffic accidents. This accounts for 4.7%, of all mortalities while it does not exceed 1.7% in each of Australia, England and America. Latest statistics indicate that, 12 deaths occur daily in Saudi Arabia due to traffic accidents. [7] The Secretary General of the Shura Council, declared that the Kingdom spent on the four million car accident annually about 26 billion riyals, and added: "The Kingdom is at the forefront of the world in terms of human and physical attrition due to traffic accidents. [8]

In Saudi Arabia the data on the number of accidents, injuries and deaths, are recorded in police reports, where they are designed for legal instead of medical purposes. These data report very little information on the health consequences of the people involved in road traffic Injuries. Another source of information about accidents RTA can be obtained from the existing health information systems (hospital discharge reports). Although this health system data include detailed health information, they are not related or linked to the data obtained by the traffic police department.

Examining the consistency of these sources is vital to build an accurate surveillance system that can track the circumstances of a traffic accident, the risk factors and the medical consequences, as well as establishing and evaluating prevention interventions.

Accurate information about this phenomenon and its health consequences is fundamental for monitoring the effectiveness and to readdress policies.

Objectives

This study is intended to:

- Examine the consistency of health registration data with the data gathered by the traffic police department.
- Elucidate the magnitude, risk factors and outcome of RTI in Qassim region of Saudi Arabia.
- Compare the pattern of accidents in Qassim with those at different regions of the Kingdom.

Methodology

Approval for the study was sought from relevant research, ethical and administrative departments and institutions. All information was kept strictly confidential and was only used for research purpose. No individualized information was declared or used in any form expect for collective information analysis.

Setting

This study was conducted in Al Qassim Region which is one of the thirteen administrative provinces of Saudi Arabia. It is located in the center of the Arabian Peninsula. It has a population of 1,016,756 according to 1425/2004 census and an area of 65,000 km². It is known to be the "alimental basket" of the country, for its agricultural asset. It is the seventh populated province in the country, having more than 400 cities, towns, villages, and Bedouin settlements. Ten cities are recognized as governorates. Buraydah is the

capital, which is inhabited by approximately 49% of the region's total population.

Data sources

Health care information

We collected data on the visits of road traffic accidents victims to emergency and outpatients' departments of all the major hospitals in Qassim region during the year 2010. The information included the patients' demographics, medical procedures, diagnoses, and outcome (discharged to home, transferred, admitted, and died). In case of trauma, the type and location of the accident was also recorded. Mortality Registry was used to collect information about deaths that occurring in the region in the same year. The Mortality Registry records the name, place of residence, date and place of death, and cause of death according to International Classification of Diseases, 10th Version (ICD-10).

Traffic Police Department information

The Traffic Police records of road traffic accidents include information on the date, time, circumstances, and location of the accident, environmental factors, types of vehicle, age, gender and socio-demographic information of driver and passenger(s). The health information reported in the police records is not specific, and indicates only injury or death. We extracted from these records all available information on RTAs occurring in 2010.

Population Information

We developed a questionnaire after reviewing national and international literature on road traffic accidents. The questionnaire was discussed in focus groups with randomly selected visitors of hospital OPDs and Primary Health Care clinics in the region. The finalized questionnaire was pilot tested and modifications were made as necessary. The questionnaire aimed to elicit the following information:

- Detailed demographic data for all participants aged 5-49 years (information was collected from parent/guardian for participants <15 years of age).
- Previous involvement in road traffic accident(s) irrespective of the severity.
- Information about the injury; duration of RTI, vehicles involved and days of recovery/disability.

Trained interviewers obtained informed consent from eligible people for participation in the study (from the parent/guardian for those aged 5-15 years), followed by confidential interview using a questionnaire designed for this study.

The sample size for the population survey was estimated to assess a road traffic accident rate of 15%, and absolute precision of 3% and a confidence level of 95%. The required sample size was 544 individuals. The sample was multiplied by 1.5 to accommodate for the design effect since sample selection will be based on stratified sampling method. After allowing for a 10% non-response rate, the final sample size was increased to 900. Survey participants were selected from the patients visiting government and private health care institutions for any reason. A multistage stratified random sampling strategy was adopted to ensure equal representation of government hospitals, Primary Health Care Centers and private health institutions.

Definition of road traffic injury

In this study, road traffic injury (RTI) was defined as any injury resulting from road traffic accident irrespective of severity and outcome. Road traffic accident (RTA) was defined as any crash on a road involving at least one moving vehicle irrespective of it resulting in an injury. This could include collision with a vehicle or any non-moving object while driving/riding a vehicle, collision with a moving vehicle while walking/running/standing/sitting on road, or fall from a moving vehicle. These explanations were given to each participant before asking questions on RTA and RTI. Recovery period is defined as days taken to return to normal daily activities as prior to RTI.

Data management and statistical analysis

Data were entered into SPSS database by one data entry operator and was checked by another. The same statistical software package (SPSS, version 11) was used for statistical analysis. Annual incidence rates for non-fatal

RTI for which medical treatment was sought as an out-patient or as in-patient were calculated.

Annual RTI mortality and disability rates per 100,000 populations were estimated based on deaths and disabilities reported in the study year. Annual RTI incidence rates were adjusted for the age and sex distribution of Qassim population. Data were classified to describe RTIs according to injury factors related to the vehicle, factors related to the environment and factors related to the driver and passengers of the vehicle.

Results

Consistency between police-reported and health registration data

Police-reported data were extracted from police records on a standardized, data collection form. The national Road Traffic Department is responsible for the design of the forms and other means to collect and register such data in Saudi Arabia, and for releasing it annually. All individuals who died of injuries in a road traffic collision within 7 days of the incident are recorded as road traffic fatalities. Police-reported data are published and accessible in the statistical yearbook of transportation. The diagnosed causes of death come from death certificates issued by health offices of the Ministry of Health, which are forwarded to the various municipal local and national organizations. Physicians classify deaths resulting from road traffic injuries in accordance with the International Classification of Diseases (ICD, 10th revision).

Using the $\chi 2$ test, we compared death rates from road traffic injuries based on police-reported data with those based on death registration data from the local health office for the period from 2005 to 2010. We used linear regression to check for statistically significant trends in mortality rates over the study period, and we used the percent change in the death rate between 2005 and 2010 to measure the linear trend.

Fig. 1 shows that between 2005 and 2010, the road traffic death rate based on death registration data was almost twice as high as the rate reported by the police ($P < 0.05$). Comparing the death rates obtained from the two sources, it was found that for every year from 2005 to 2010 the police-reported rate of death from road traffic injuries was consistently no more than 60% of the rate obtained from health registration data. In 2010, the death rate based on police reports was only 35% of the rate based on death registration data.

Police-reported data and health registration data showed different trends in road traffic death rates. Linear regression showed a significant decline of 27% according to police-reported data during 2005–2010, as opposed to a non-significant increase of 8% according to health registration data.

Population Survey Information

Of the 900 eligible participants, 835 (92.8%) participated and responded to the questionnaire. Of the participants, 545 (65.3%) were males and 290 (34.7%) were females. The participation rate was 95.6% (545 out of 570) for males and 87.9% (290 out of 330) for females.

Annual non-fatal RTI incidence

During the last 3 months, 126 (15.1%) non-fatal RTI were reported by participants. The overall age-sex-adjusted rate for non-fatal RTI was 20.7 (95% CI, 20.0 - 21.3)/100 persons/ year. The adjusted rate for RTI requiring recovery period of ≤7 days and >7 days was 13.0 (95% CI, 12.6 - 13.4) and 7.0 (95% CI, 6.7 - 7.3), respectively (Table 1).

The overall rate for non-fatal RTI is higher in the 10-19 years age group (17.3%). Males had twice or more incidence rate for RTI requiring recovery period of ≤ 7 days as compared with females, however, RTI incidence for recovery period of >7 days is more than twice in females as compared with males**.** The decline in RTI incidence from 3-months to 12-months recall period was 51.8%

The non-fatal RTI incidence requiring recovery period of less than 7days was similar in the 2 groups of monthly income (≤ 10.000 SR & > 10.000 SR), 13.7% and 13.6% respectively. However, people with lower monthly income had slightly higher incidence for RTI requiring recovery period more than 7 days or more (6.0% vs. 5.3%).

Data on treatment were available for 120 (95.2%) of the non-fatal RTI in the last 3 months. Of these 120 non-fatal RTI, medical treatment outside home was sought for 75 (62.5%) RTI of which 70 (93.3%) received treatment in the out-patient departments and emergency rooms of the hospital. The overall

annual incidence of non-fatal RTI for which medical treatment outside home was sought was 12.5 (95% CI, 11.7 - 13.3)/ 100 persons/year, and that as out-patient and in-patient was 12.1 (95% CI, 11.4 - 12.9) and 0.4 (95% CI, 0.3 - 0.6)/100 persons/year, respectively. Among the 5 people who were treated as in-patient, 1 patient was pedestrians and 4 patients were motor vehicles users. The mean length of stay in the hospital was 4.6 days (median 3 days, range 1 to 10 days).

Annual RTI mortality and disability rates

A total of 12 deaths due to RTI were reported in 5-49 years age group in the last 3 years, representing an estimated annual RTI mortality rate of 35.4/100,000 (95% CI 16.6 - 57.8). Among these 12 deaths, 6 (50%) were on cars, 4 (33.3%) in 4wheel drive cars, and 2 (16.6%) were pedestrian.

A total of 11 participants reported RTI related disabilities in the last 3 years representing an estimated annual RTI disability rate of 34.1/100,000 population (95% CI 11.4 - 55.7). Eight of the eleven participants with disability (72.7%) were aged 30-49 years, 6 (54.5%) were males. Of them, 2 (18.2%) were pedestrian, 9 (81.8%) were motor cars users. Four out of the eleven participants with RTI related disability (36.4%) reported body structure related disabilities and 7 (63.6%) reported body function related disabilities.

Epidemiology of RTA in Qassim

The records of Qassim Traffic Police Department showed that 18623 accidents occurred throughout the year 2010. These accidents involved 23178 persons, and resulted in the injury of 2025 people and the deaths of 369. In contrast, the reports from the health care system showed that 4232 people had been injured and 1054 had died.

The monthly distribution of RTA in Qassim Region during the period of study showed that the highest rate of accidents (13.1%) occurred during December, while the lowest rate (5.8%) occurred during March. Records also showed that the last three days of the week (Wednesday, Thursday and Friday) had the highest proportion of accidents (15.62%, 15.74% and 14.91% respectively) while Mondays showed the lowest rate of accidents (13.2%). Almost half of the accidents (51.2%) occurred during the day, while the other half 48.8% occurred at night. In addition, 62.98% occurred in town, while 37.02% occurred out of town.

Qassim traffic authorities reported seven main types of RTA; they are in order of frequency: collision with another vehicle(s) (80.75%), collision with a pedestrian (1.06%), over-turning of the vehicle (6.41%), collision with a fixed object (5.82%), collision with animals (3.31%), leaving the road (2.19%) and fire in the vehicle (0.08%), in addition to other types (0.38%).

Figure 2 illustrates the different causes of RTA as reported by the traffic authorities; they are in order of frequency: very high speed (43.11%), incorrect turning of the vehicle (14.69%), vehicles proceeding incorrectly (14.52%), incorrect stopping of the vehicle (13.69%), violating the traffic signals (1.77%), and driver under the influence of drugs (0.01%), in addition to other causes (12.21%).

According to the statistics of the traffic police department in Qassim, 23178 persons involved in the RTA during the year 2010. The age distribution of those involved was 2146 (9.3%) of persons less than 18 years old, 7477 persons (32.26%) were 18-30 years old, 7638 persons (32.95%) were 30-40 years, 3763 persons (16.24%) were 40-50 years, while 2154 persons (9.29%) were above the age of 50 years. As regards nationality, about two-thirds of drivers were Saudi nationals (14481 persons, 62.48%), while non-Saudis constituted one-third (8797 persons, 37.52%). Finally, 93.42% of those involved in the accidents were literate and 61.71% were married

Traffic police illustrated that the great majority of cars involved in accidents (89.30%) were in good condition, while the minority (10.37%) had some sort of defects. These defects were in the form of faulty lights, faulty brakes, faulty steering devices and sudden unpredictable defects.

Medical reports obtained from the hospital of the regions showed that the head and neck were affected in about two-thirds of victims (63.19%), the lower limbs in 27.87%, the upper limbs in 18.62%, the trunk in 14.11% and the internal viscera in 1.61%

Comparison with local & Arab Rates

The number of road traffic accidents in Qassim region during the year 2010 was

18623. Qassim is among the highest 5 regions in the kingdom regarding the number of RTA after Riyadh, Jeddah, Makkah, and Madinah. Table 3 shows that Saudi Arabia is having a very high level of road traffic clashes compared to some other Arab countries. Saudi Arabia has RTA rate that is almost 6 times higher than the rate in Algeria which is a more populated country. Death rate is also higher in Saudi Arabia compared to other Arab countries.

Discussion

Results of this study support the hypotheses that rates of death from road traffic accidents based on police reports and on health registration data are different, and that unlike police-reported data, health registration does not show steadiness or decline in the rates of road traffic deaths. These inconsistencies strongly suggest that the steady or decreasing trend in road traffic mortality shown by police-reported data may not be authentic.

The inconsistencies described in this study may reflect to some extent the use of different definitions for a road traffic death leading to underreporting of road traffic-related deaths in police records. In addition to differences in definitions, this may reflect differences in data collection methods. For example, in western Scotland, 45% of hospital admissions due to road traffic injuries were not recorded by the police. [9] Loo et al. have reported that in the Hong Kong, the police-reported road accidents rate was only 58–60% of the actual rate, and that underreporting was particularly high for children (reporting rate of 34%) and cyclists (reporting rate of 33%). [10] In another study, some road traffic injuries were not reported to the police mainly because, according to respondents, it was “not necessary” or the incident was a “hit and run case”. [11] Others have suggested that road traffic officials may be underreporting RTA statistics to avoid criticism from superiors who expect to see rates go down. [12]

Knowing the actual number of road traffic fatalities is essential for planning realistic policies aimed at reducing these deaths. The inconsistency between police-reported data and death registration data strongly suggests that: (i) Local and national organizations should interpret RTA statistics cautiously; and (ii) Police departments should improve the quality of their data by adopting a definition of “road traffic death” that is based on the international classification of diseases (ICD). Also, (iii) Police departments should integrate multiple data sources when estimating the burden of road traffic injuries and deaths. [13]
In conclusion, the inconsistencies between the rate of death from road traffic deaths based on police-reported data and on health registration data strongly suggest that there is underreporting of road accidents' fatalities from the police departments. Active efforts to audit and monitor data quality, even if only in periodic or sample surveys, are necessary.

In this study, a population survey representative of the 5-49 years age group in Qassim was done. The results of this survey showed that nearly 1 in 14 people reported non-fatal RTI annually requiring a recovery period of >7 days, and nearly 1 in 7 people reported non-fatal RTI annually requiring recovery period of ≤ 7 days. An estimated 38 and 35 per 100,000 people die and are disabled due to RTA each year, respectively. The annual incidence of RTI requiring less than 7 days of recovery was 13%, while the annual incidence of RTI requiring more than 7 days of recovery was 7% in this population. These findings suggest that the magnitude of RTI is high, and is higher than that reported from other developing countries. [14-19]

We examined some possible reasons for this. The majority of the previously published population-based studies on RTI incidence from other countries have reported data that had resulted in loss of activities using 12-months recall period, and most of these had reported proxy data. In order to get a more comprehensive picture of RTI, we documented all RTI irrespective of the severity or the number of days of loss of activity. We did not use proxy data but collected data directly from all eligible participants in the population surveys except those 5-15 years old. We used a recall period of three-months to estimate the annual incidence of non-fatal RTI as recall bias is a major limitation for data on non-fatal injuries, and less severe injuries in particular are underestimated with longer recall periods.[20, 21] Our data show that the decline in RTI incidence from 3- to 12-months recall period was 51.8%.

The study also recognized multiple RTI during the recall period in the same participant.

Injuries may be clustered in some individuals. [22] During the development and testing of the study questionnaire, it was observed that some events were not considered RTA by participants. Therefore, each participant was explained the definition of RTA and RTI to ensure that the information on these were not missed. This has resulted in better RTI estimates.

The burden of RTI in Qassim area was enormous. This burden was highest in young males. The over representation of young adults and males has been documented previously and is possibly related to their differential exposure to risky behaviors. [1, 23-25] Interestingly, the non-fatal RTI incidence was similar between 2 groups of monthly income for RTI requiring recovery period of less than 7days. However, people with lower monthly income had higher incidence for RTI requiring recovery period more than 7 days or more. Socioeconomic status is known to be a risk factor for injury including RTI, and mortality and morbidity rates in vulnerable road users have been reported to be higher in the lower social classes. [1, 26, 27] However, a cohort study from rural Vietnam did not find poverty either as a risk or protective factor for RTI and the middle income group was exposed to the highest risk of RTI. [22] We used per capita monthly income as a measure of socioeconomic status; other indicators such as education, occupation and household expenditure have also been used previously. Further research is needed to better understand the complex association of socioeconomic status with RTI.

The annual RTI mortality rate per 100,000 in the 5-49 years age group was 35.4/100,000 (95% CI 16.6 - 57.8). This study was not powered to measure RTI mortality rate as the required sample size for such an assessment would be very large, and the wide confidence interval highlights the importance of a reasonable sample size to arrive at reliable RTI mortality estimates. The point estimate of RTI mortality in Qassim population aged 5-49 years is nearly twice that reported by many other developing countries. [28]

The results of this study show that the last three days of the week (Wednesday, Thursday and Friday) had the highest rates of RTA. This could be attributed to the fact that some adolescents and young adults participate in unofficial car races with their peers at the week-ends as a leisure-time activity. In addition, people used to seek relatives' visits, recreation and shopping during the weekend exposing themselves to the risk of RTA.

In Qassim region, 9.3% of those involved in RTA were under 18 years; who were lacking the driving skills and experience. This may increase both the risk and severity of accidents. Additionally, very high speed was responsible for about 43.11% of RTA. This was the leading cause of accidents in the region and draws the attention to the significance of the recent system launched by the government of Saudi Arabia to make roads safe. This system is called "Saher System". The "Saher" is a state-of-the-art traffic management system that can monitor vehicles and track them using a license plate recognition technology. It has been in development for a year and now is working on all major cities. It is monitoring traffic violations as they happen. Saudi Arabia has also enforced seat belt law on 5th December 2000 making seat belt use compulsory for all drivers and front seat passengers.

Conclusion

This study has demonstrated that RTI are responsible for significant loss of life, disability in Qassim population in Saudi Arabia as the young and economically productive age group is affected. In the background of the recent interest by the Government of Saudi Arabia to address RTI, these findings could assist in raising the profile of RTI as a public health problem which needs to be addressed as a preventable cause of mortality and morbidity, and to plan appropriate interventions for it. Also, the inconsistencies between the rate of death from road traffic injuries based on police-reported data and on health registration data strongly suggest that active efforts to audit and monitor data quality are clearly necessary

Table 1: Estimated annual non-fatal road traffic injury (RTI) incidence rate per 100 persons for three-months recall period in population aged 5-49 years in Qassim.

Variable	Total	Number with RTA (% of total)	Recovery period of ≤ 7 days	Recovery period of >7 days	Annual non-fatal RTA incidence per 100 person
Age group (Ys)			Rate (95% CI)		
▪ 5-9	114	13 (11.4)	10.2 (9.8-10.6)	5.3 (4.8-5.8)	15.2 (14.6-15.8)
▪ 10-19	220	38 (17.3)	16.7 (16.2-17.3)	6.3 (5.9-6.7)	23.7 (23.1-24.3)
▪ 20-29	225	37 (16.4)	13.5 (13.0-13.9)	8.9 (8.7-9.2)	21.1 (20.5-21.8)
▪ 30-39	157	24 (15.3)	13.0 (12.6-13.5)	5.8 (5.5-6.1)	20.2 (19.5-20.8)
▪ 40-49	119	14 (11.8)	7.5 (7.1-8.0)	4.1 (3.9-4.4)	13.5 (12.9-14.1)
Sex					
▪ Male	545	95 (17.4)	17.8(17.1-18.4)	2.9 (2.7-3.1)	28.5 (27.6-29.4)
▪ Female	290	31 (10.7)	7.9 (7.5-8.4)	8.5 (8.1-8.9)	12.4 (11.6-13.1)
Monthly Income					
▪ ≤ 10.000 SR	503	75 (14.9)	13.7 (13.2-14.1)	6.0 (5.0-7.0)	21.7 (21.2-22.3)
▪ >10.000 SR	332	51 (15.4)	13.6 (13.2-14.1)	5.3 (5.1-5.6)	22.4 (21.8-23.0)
Overall	835	126 (15.1)	13.0 (12.6-13.4)	7.0 (6.7-7.3)	20.7 (20.0-21.3)

Table 2: Age distribution of persons involved in RTA in Qassim during 2010 – Police Records

Age Group	Number of Persons	Percentage
< 18 Ys	2146	9.30
18 -	7477	32.25
30 -	7638	32.94
40 -	3763	16.23
50 -	2154	9.28
Total	23178	100

Table 3: Total number of road traffic crashes, morbidity and mortality recorded in some Arab countries in 2004

Country	Number of vehicle	Number of RTC	Number of deaths	Number of injured
Jordan	612,330	70,266	818	12,727
UAE	1,100,765	8,269	824	10,233
Tunis	1,113,493	10,880	1,656	15,698
Algeria	4,000,000	43,777	4,356	64,714
Saudi Arabia	2,087,769	293,281	5,168	34,811
Oman	468,412	9,460	637	6,636
Palestine	1 86,153	4,760	163	4,905
Qatar	424,461	2,362	164	1,371
Lebanon		4,494	397	3,227
Yemen	60,254	12,257	2,249	13,117
Total	10,053,637	459,806	16,432	167,439

Figure 1: Comparison of road traffic death rates based on police report and on health registration data

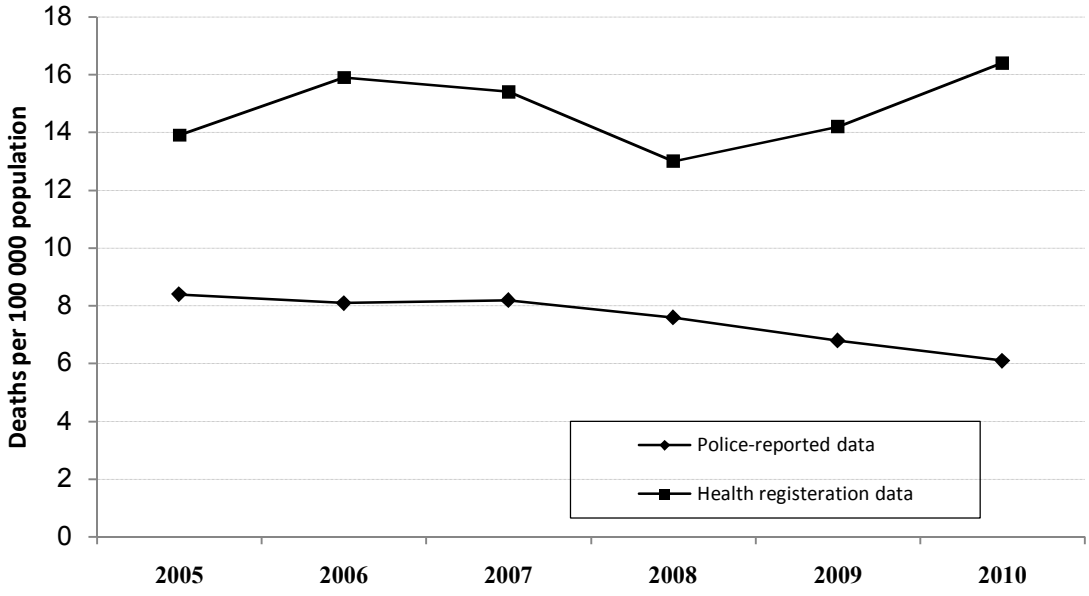
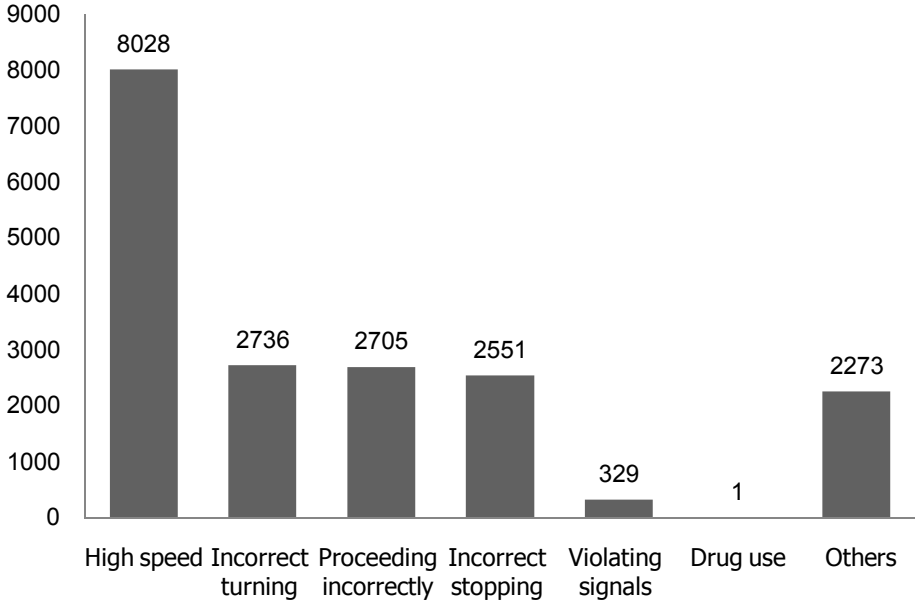


Figure 2: Different Causes of RTA in Qassim During 2010



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