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الخلاصة

تعتبر حوادث الطرق في العالم اجمع من أهم مسببات الموت في العصر الحاضر . لقد بينت هذه الدراسة وقوع ٢٤ حادث طريق في بغداد لليوم الواحد ، وأن منطقة الثورة كانت من أكثر المناطق تعرضا للحوادث ، كما تبين عدم وجود تمايز احصائي بين اعمار الذكور المصابين بالحوادث واعداد الاناث ، كما تبين ايضا وجود تمايز احصائي بين اوقات وقوع الحادث ، في حين اختفى هذا التمايز الاحصائي بين أيام الاسبوع المختلفة . أن الدراسة أظهرت ان الكحول كان أحد الاسباب الرئيسية لوقوع الحادث ، يليه مواقع اعمدة الكهرباء في الشارع .

Epidemiological Study of Road Traffic Accidents

In Baghdad Area

**HIKMAT JAMIL*,
GHAIB M. MUKHLIS*,
and GHALEB AL-HABBOUBI***

SUMMARY

Road Traffic Accident (R.T.A.) is one of the most important causes of death. Three months data on R.T.A. was collected and statistically analysed. There was an average of 24 R.T.A. per day.

The Al-Thouwra area showed the highest number of R.T.A. There was a significant difference among males for occurrence of R.T.A., but it was not so for females. The effect of time during the day for occurrence of R.T.A. was highly significant, but there was no significant difference among the days of the week. Those who reported the cause of R.T.A. alcohol was the main followed by hitting a lamp post.

INTRODUCTION

This paper is an attempt to assess the magnitude of the problem of R.T.A. in Baghdad area and to study the various factors that affect it. The aim of the study is to evaluate the already available information for R.T.A. in the police station and used the data obtained to study the problem of R.T.A. in Baghdad.

It is indeed ironical that all other epidemics through out history have been due to the onslaught of agents external to man, principally protozoa, bacteria and viruses but R.T.A. are caused by man himself. However, the majority of the R.T.A. are preventable as they do not occur by chance, (Norman 1962).

Road Traffic Accidents constitute a major public health problem. The

* Department of Community Medicine, Medical College, University of Baghdad.

frequency of R.T.A. is high particularly in countries where motorization is beginning to expand. W.H.O. (1976) reported that in the developed countries, the number of deaths from R.T.A. (e.g. in 1973 in U.S.A. it was 59986 and U.K. 8806) exceeding the total number of deaths from all infectious diseases (in U.S.A. it was 31338 and U.K. 7542).

R.T.A. is a world wide problem, so to evaluate the magnitude of the problem, Hobbs (1974) anticipated that 0.25 million deaths and 10 million serious injuries would occur all over the world each year in next ten years. Gasem (1977) found that the total number of R.T.A. in 1975 in Iraq was 8000. This is 250% more than the average number of accidents between 1968-72. He anticipated that the total number of R.T.A. in Iraq will increase and will reach approximately 10000 per year. Hashim (1975) calculated the total cost (due to damage of property and payment for human loss) for 7920 R.T.A. which occurred in Iraq was 6 million I.D.

Different groups of population are affected differently by accidents despite the effect of other factors. The causative factors for R.T.A. are environmental factors (including the road) the vehicle (the driver included) and the pedestrian. The other factors which enhance the risk of R.T.A. are alcohol, tiredness, emotional stress, not using seat belts and behaviour disorder. The factors which affect the incidence of R.T.A. among drivers are age, geographical area, wheather, time of the day, day of the week, education, feeling of responsibility and health conditions. Despite this, driving itself carries a special hazard to the drivers as they may be exposed to poisonous fumes of carbon dioxide gas, diesel oil fumes and gasoline fumes and noise of 80 db or more in big trucks, lumbago and rheumatic disorders.

MATERIALS AND METHODS

The present study is concerned only with the R.T.A. which were reported to the local police station (L.P.S.). This study includes the fatal and cases that required hospital treatment. The data for R.T.A. was extracted from a copy of the daily report from head quarters of Baghdad Police (H.B.P.). The reports for a period of 90 days beginning from first January 1977 to March 1977. The reports of two days

knocked down cases, which were reported only to the L.P.S.

2. Collision: The real number of cars involved, whether it is one car, as in the case of hitting a wall or a lamp post is recorded as one accident. If two or more cars are involved, the number of accidents will be recorded according to the number of cars involved in that accident.

3. Area: The data was extracted from 53 L.P.S. and it was grouped according to the geographical districts of Baghdad.

4. Table No. 1 shows the number and the percentage of missing information from daily report. Though all the information was recorded at L.P.S., but somehow there was no way of extracting data from these stations due to following reasons.

Table 1: Shows the missed information of the data collected.

Type of data	known		Unknown		Total	
	No.	%	No.	%	No.	%
Type of vehicles	1342	61.3	848	38.7	2190	100.0
Cause of accidents	127	5.8	2063	94.2	2190	100.0
Time of accidents	833	38.0	1357	62.0	2190	100.0
Age of drivers	60	2.7	2130	97.3	2190	100.0
Job of the drivers	797	36.3	1393	63.7	2190	100.0
Age of victims	640	33.3	638	66.7	1278	100.0
Job of victims	483	37.8	795	62.2	1278	100.0

- a) There were 53 local police stations distributed in the Baghdad area. The individual report of R.T.A. was mixed with other reports, which made it impossible to extract it.
- b) A large number of the original reports had been sent to different courts and left no copy in the L.P.S. Another reason for missing information from the main report was that each L.P.S. made a daily summary of its activities and sent it to H.B.P. The H.B.P. again made a summary of all activities of L.P.S. including R.T.A. and presented it as daily report resulting in missing most of the details about accident victims such as their age, occupation and type of car whether it is private or public.

It must be remembered that several accidents were not included in

the daily report, because many times, the two drivers or the driver and the injured person involved in an accident solve the problem themselves.

On the other hand a large number of accidents occurred and were not reported to the L.P.S., but were reported directly to insurance company for compensation.

Statistical analysis of data was made on available information, this information was mainly concerned with the factors affecting the incidence of R.T.A. The Chi-square of goodness of fit for table 2 & 3 will apply on the hypothesis that there is no reason to have differences in the rate of R.T.A. on the day of the week or by the time of the day. If the results showed a significant difference, then there may be a cause for R.T.A. to happen on different days of the week or during different time of the day.

Table 2. Shows the type and No. of accidents in relation to the day of the week, together with values of Chi-square of goodness of fit.

Day of the week	Type of accidents			No.	Total %
	Collision	Turning-over	Knocked-down		
Sat.	232	10	94	336	15.4
Sun	191	11	90	292	13.3
Mon.	254	5	88	347	15.9
Tues.	203	8	123	337	15.3
Wed.	210	8	131	349	15.9
Thurs.	213	9	113	335	15.3
Frid.	112	5	80	197	8.9
Total	No.	1415	56	719	2190
	%	64.6	2.6	32.8	100.0
χ^2	12.3	2.6	15.9		
d.f.	5	5	5		
p	0.05	0.50	0.05		

Of all types of accidents, with exclusion of friday from the test.
 $\chi^2 = 6.7$, d.f. = 5, P 0.1

Table 3. Distribution of the type of accident by the time of the day, together with the values of Chi-square of Goodness of Fit.

Time of day	Type of accidents			No.	Total %
	Collision	Turning-over	Knocked-down		
1 - 3 a.m.	15	1	3	19	2.3
4 - 6 a.m.	6	1	1	8	0.9
7 - 9 a.m.	61	2	15	78	9.4
10-12 (noon)	99	1	38	138	16.6
1 - 3 p.m.	171	6	66	243	29.2
4 - 6 p.m.	110	2	59	171	20.5
7 - 9 p.m.	63	2	51	116	13.9
10-12 (mid-night)	40	—	20	60	7.2
Total	565	15	253	833	100.0
Time unknown	850	41	766	1357	
Grand total	1415	56	719	2190	
Exp = Uniform	63.25	3.75	141.25		
X ²	16.52	5.487	12.07		
d.f.	3	3	3		
	P 0.001	P 0.1	P	0.001	P

* Unknown is not included in the test

Table 4 & 5, the age groups were classified into 10 years for people who are above 20 years of age. While those below 20 years were classified into 3 groups according to their entrance to the school i.e. 6, 7-13 & 14-19 years, in order to show the effect of education in relation to the occurrence of R.T.A.

Table 4 & 5 were tested by Chi-square (Contingency table) to test if there is any significant difference between different age groups causing R.T.A. Though it was more worthed to apply this test of the age groups of the whole populant (all driver) were able to get.

Although the authors were interested in getting more information about the density of population in all areas and about the socio-economic status of the people residing in that area and about the number of miles driven by cars, the number of cars according to their types, but it was impossible to obtain such information.

Table 4. Distribution of the results of accidents by the age of male victims, together with the value of Chi-sq square (Contingency table) between the killed and injured people.

Age of the victim in years	Results of the accidents			Killed	Grand total
	Mild	Injured Serious	Total		
0 - 6	9	66	75	12	87
7 - 13	18	71	89	13	102
14 - 19	14	36	50	5	55
20 - 29	11	30	41	1	42
30 - 39	7	26	33	4	37
40 - 49	3	14	17	1	18
50 - 59	9	14	23	2	25
60 and over	8	26	34	10	44
Total	79	283	362	48	410
Unknown*	215	306	521	38	559
Grand total	294	589	883	86	969

* Unknown is not included in the test

$X^2 = 6.349$

d.f. = 3

P 0.05

Table 5. Distribution of the results of accidents by the age of female victims, together with the values of Chi-square (Contingency table) between killed and injured people.

Age of victim in years	Results of the accidents			Killed	Grand total
	Mild	injured Serious	Total		
0 - 6	14	43	57	5	26
7 - 13	8	36	44	4	48
14 - 19	12	15	27	1	28
20 - 29	11	12	23	—	23
30 - 39	3	9	12	—	12
40 - 49	5	11	16	1	17
50 - 59	2	17	19	4	23
60 and over	3	13	16	1	17
Total	58	156	214	16	250
Grand Total	91	195	286	23	309

$\chi^2 = 4.607$

d.f. = 3

P 0.10

* Unknown is not included in the test.

RESULTS AND DISCUSSION

An attempt is not made to compare the results of this study with previous studies done in Iraq. The main reason is that in previous publications, the problem was not approached as an epidemiological problem. However, Al-Mousawi (1978) and (1980) published two papers on R.T.A. based on the data of autopsies carried out in the medicolegal institute of Baghdad. But this data does not represent the actual size of the problem. The other available information was from Iraqi Traffic Police Head quarters, which give figures of killed or injured persons only.

During the first three months (90 days) of the year 1979, there were 2190 accidents in Baghdad with an average of 24 accidents per day. Fig. 1 shows that 64.7% accidents were due to collisions, 32.8% when people were knocked down and 2.5% when the vehicles were overturned.

The Al-Thouwra area in Fig. 2 showed the highest number of accidents (19.4%) while the western Baghdad area being the lowest (9.1%). Out of 2190 accidents, 1278 were injured with an average of 14 persons per day, out of which 109 people were killed (8.5%) and 784 people were seriously injured. (61.3%) and 385 people needed hospital treatment (30.1%) (Fig. 3).

It was found that accidents occurred (mainly) on Monday and Wednesday (15.9%). There was a significant difference for collisions and people being knocked down ($P 0.05$), but it was not so in case of vehicles overturned ($P 0.50$). When Friday was excluded from the test of significance (Chi-square test of goodness of fit), there was no significant difference ($P 0.1$) between the days of the week (6 days) for all types of accidents. But when test was applied separately, there was a significant difference ($P 0.05$) for collisions and people being knocked down, but not for vehicles overturned $P 0.5$. It is of interest to mention that the analysis of deaths due to R.T.A. by the days of the week for the year 1972-73 showed no significant difference (without Friday), when the average of accidents were examined against the usual expected number of deaths by 6 days of the week (statistic office of general police directorate 1975). The risk time (table 3) for accidents was between 1-3 p.m. (29.2%) while the safest time was between 4-6 a.m. (1.0%). The effect of time on accidents was highly significant for collisions and people knocked down ($P 0.001$) but not for vehicles overturned ($P 0.1$) this can be explained by the fact that during rush hours, when people go back to their homes after 6-8 hours of work. They get tired and exhausted and thus their performance of driving declines at this time, (1-3 p.m.); where as, on the other hand, a person is fresh and active during 4-6 a.m. and the number of cars on the road is also less during this time as well as pedestrians. Thus driving at this time is safe and a smaller number of accidents take place.

The younger age groups are more involved in accidents than older age group. Our findings are similar to previous study done by Fazool (1977) which showed that both children between the age group 5-15

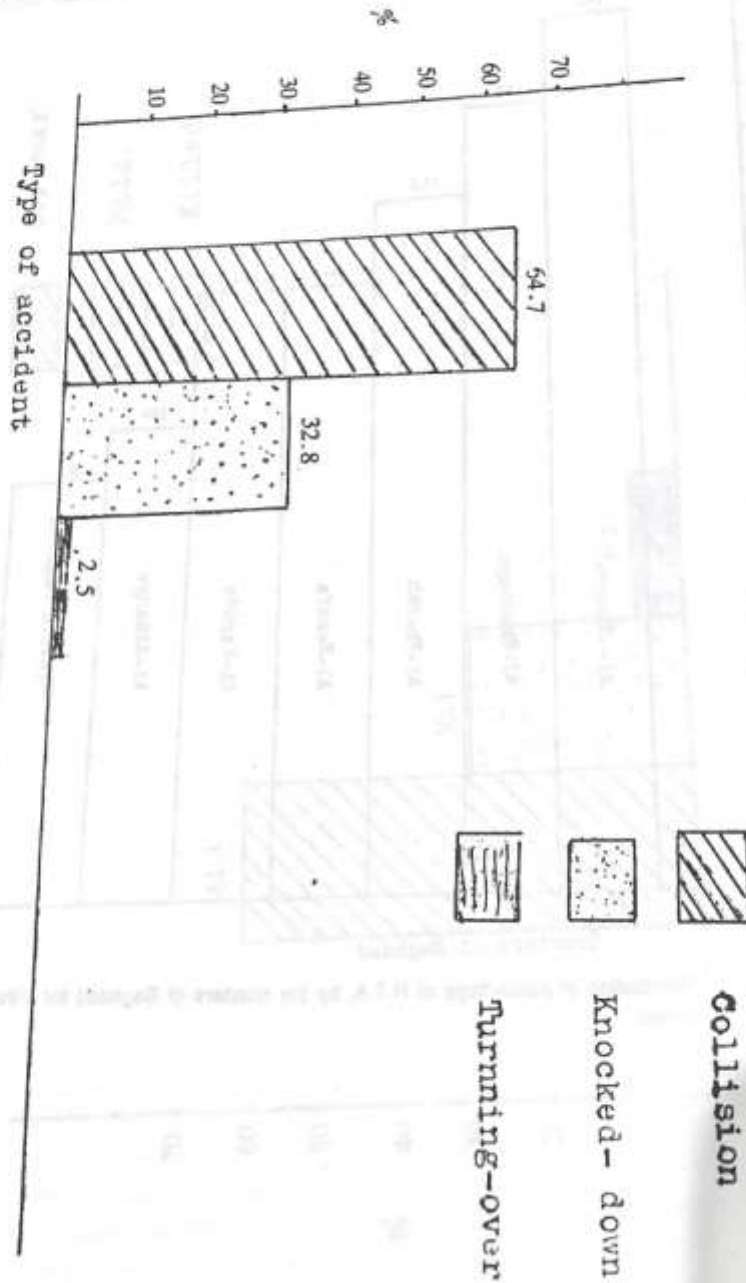


Fig. 1. Shows the percentage of different types of R.T.A. for a three month period.

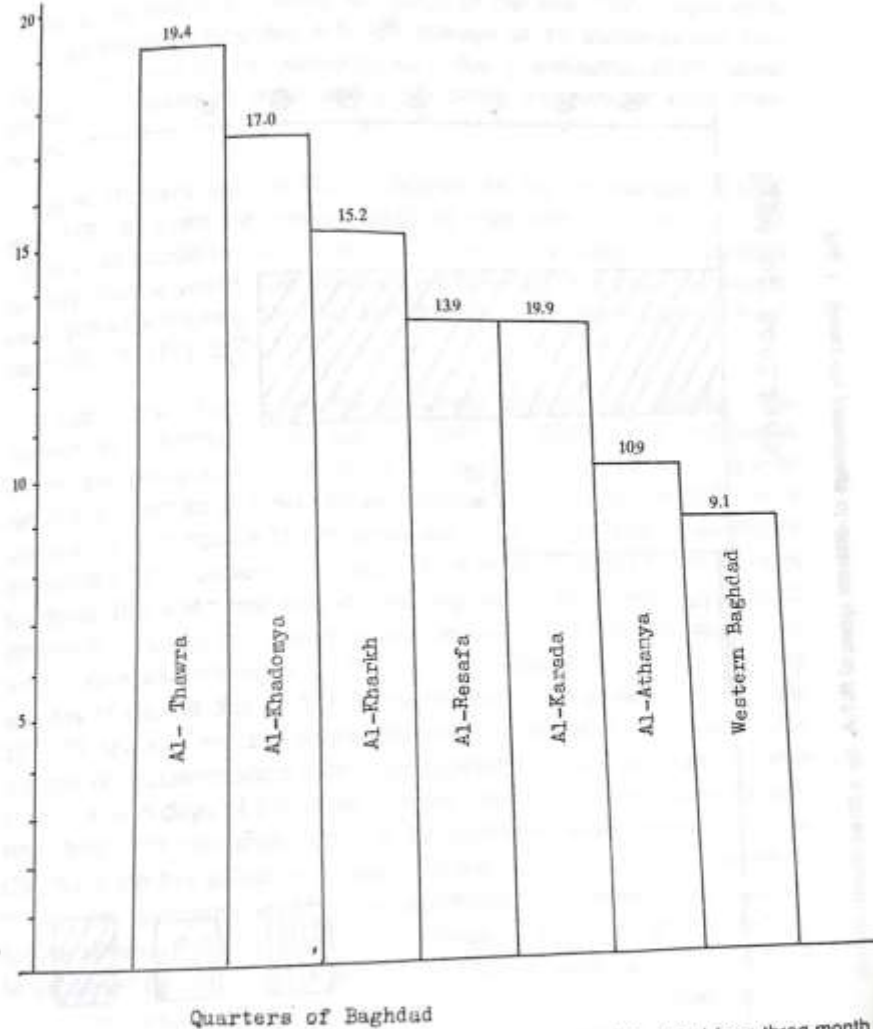
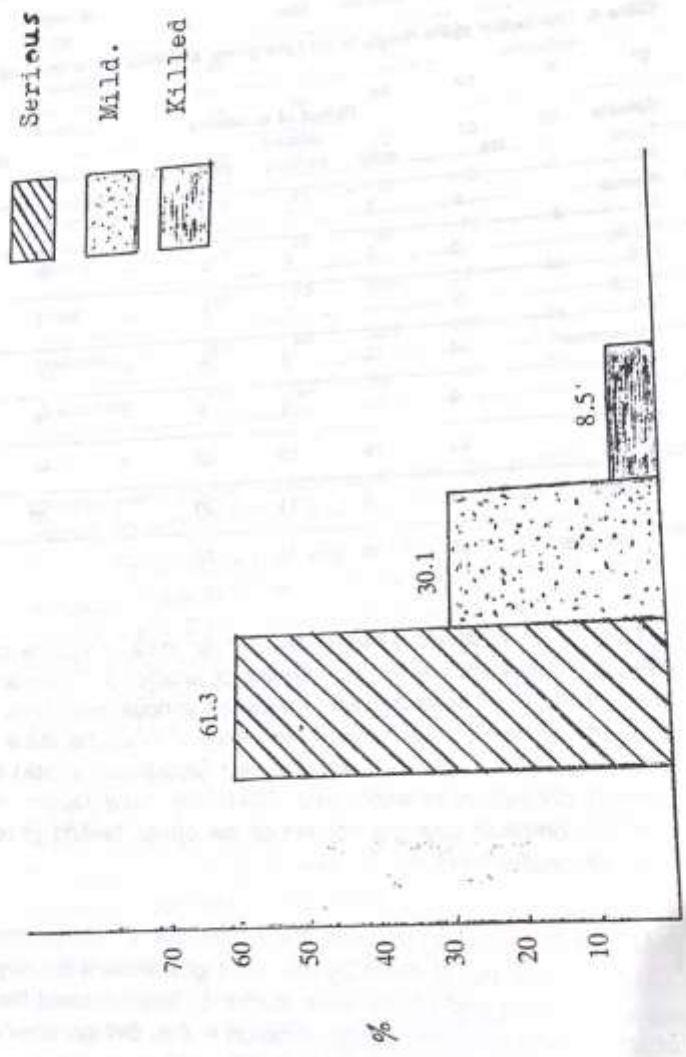


Fig. 2. Distribution of percentage of R.T.A. by the quarters of Baghdad for a three month period.

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Results of accidents

Fig. 3. Shows the percentage of the results of accidents for a three month period.

years and older people of 60 years and over are more liable to accidents.

Table 4 & 5 shows that there was a significant difference for males for causing R.T.A. (P 0.05) but where as it was not so in case of females in different age groups (P 0.1).

Table 6. Distribution of the results of the turning-over accidents by the type and number of vehicles.

Vehicle Type	No.	Result of accidents				No.	Grand Total %
		mild	Injured serious	total	Killed		
Private	5	3	—	3	—	3	6.8
Public	3	3	6	9	—	9	20.5
Truck	5	—	1	1	—	1	2.2
Government	24	13	12	25	2	27	61.4
Others	6	—	4	4	—	4	9.0
Total	43	19	23	42	2	44	100.0
Unknown	13	9	11	20	—	20	
Grand total	56	28	34	62	2	64	

Table 6 & 7 shows whether the car or truck is private or public, it plays an important role in the number of accidents. There was a difference in the number of accidents between various categories of car. But however no test of significance was applied, because there was no information about the total number of cars (population at risk) and the density of population in each area. Therefore many factors may explain this phenomenon such as training of the driver, feeling of responsibility and personality.

Out of 1278 injured persons, the occupation of 483 persons (Table 8) was recorded, out of them 26.0% were government employees, 14.9% were labourers and 13.0% were students. This indicates the importance of introducing education programme on R.T.A. On the other hand 30.8%

Table 7. Distribution of the results of the knocked-down accidents by the type and No. of vehicles.

Vehicle Type	No.	Results of accidents			Killed	No.	Grand total %
		mild	Injured serious	total			
Private	67	13	48	61	6	67	17.9
Public	68	16	44	60	8	18	18.3
Truck	23	1	12	13	10	23	6.2
Government	139	25	110	135	13	148	39.7
Others	60	17	54	62	5	67	17.9
Total	357	72	259	331	42	373	100.0
Unknown	362	60	304	364	36	400	
Grand total	719	132	563	697	78	773	

children were injured, which proves that the existing programme in the primary schools on R.T.A. is still not working well.

Out of 2190 accidents, only in 127 cases the cause of accident was reported. (Table 9). Thus 47.3% of accidents were due to alcohol consumption and 23.8% people hit a lamp post. This could be a good hint for safety police to introduce a drinking test as a trial, especially on those accidents which occur after 7.00 p.m. also to re-examine the positions of lamp posts to avoid further accidents in future.

The occupation of 797 drivers was known (Table 10). 68.5% of them were driving government cars. Thus it indicates the necessity of introducing refresher courses for correct way of driving and safety in general. The present study lays emphasis on examining these factors, which are responsible for causing accidents.

The explanation of these results has to be related to the number of different types of vehicle in Baghdad and how many kilometers they run during the period of study. But unfortunately, there was no such record available on one hand and not accessible on the other.

Table 8. Distribution of the results of all types of accidents by the job of the victims.

Job of the Victims	Results of accidents				Grand Total	
	Injured			Killed	No.	%
	Mild	Serious	Total			
Child (-6 years)	23	109	132	17	149	30.8
Student	24	37	61	2	63	13.0
Labourer	35	33	68	4	72	14.9
Government employee	46	75	121	5	126	26.0
Driver	1	10	11	1	12	2.5
Clerk	19	15	34	2	36	7.7
Others	8	15	23	2	25	5.1
Total	156	294	450	33	483	100.0
Unknown	229	490	719	76	795	
Grand total	385	784	1169	109	1278	

On the basis of this study, we make following suggestions to Head Quarters of Baghdad Traffic Police (H.B.T.P.); It is necessary to have a simple form for R.T.A. available at L.P.S., which has to be filled in at the time of accident and this form should be directly forwarded to H.B.T.P. we insist that the form should be simple and easy to fill in, so that such a form can be easily analysed and it may help in discovering the further cause of accidents. We also suggest that traffic police officers should take into consideration the system of shift work. The new shift should start one hour before the rush hours, because the person on duty should be very active during the rush hours. The results of statistical

Table 9. Distribution of the Cause of the accidents by the type of accidents.

Type of accidents	Causes of accidents					Others	Total	Unknown	Total
	Alcohol	Lamp post	Blow up of tyre	Bothering during driving					
Collision	40	30	2	4	9	85	1330	1415	
Turning over	2		3	6	8	19	37	56	
Knocked-down	18	—	—	—	5	23	696	719	
No.	60	30	5	10	22	127	2063	2190	
%	47.3	23.8	3.9	7.7	17.3	100			

Table 10. Distribution of the No. of accidents by the job of the drivers.

Job of the drivers	No.	%
Governmental	546	68.5
Manager, director and professionals	61	7.7
Public (Taxi)	57	7.2
Clerk	64	8.0
Contractors and merchants	8	1.0
Diplomat	7	0.9
Students	24	3.0
Others	30	3.8
Total	797	100.0
Unknown	1393	
Grand Total	2190	

analysis of R.T.A. from H.B.T.B. should be published monthly in all the leading newspapers and local journals to make people conscious of loss of human life due to R.T.A. Thus a refresher course on safe driving

Table 11. Distribution of the type and No. of accidents by the type of the vehicle.

Type of vehicle	Type of No. of accidents			Total Number	%
	Collision	Turning-over	Knocked-down		
Private	134	5	67	206	15.3
Public (Taxi)	82	3	68	153	11.4
Truck	59	5	23	87	6.4
Government	567	24	139	730	54.4
Others	100	6	60	166	12.5
Total	942	43	357	1342	100.0
Unknown	473	13	362	848	
Grand Total	1415	56	719	2190	

should be introduced in general and especially for government drivers, because they make a large number of accidents. We also suggest the re-examination of those roads and the position of those lamp posts in different areas where a large number of accidents took place. More research is required in this field as R.T.A. are leading a cause of death.

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