

**MOTOR VEHICLE ACCIDENTS:  
ANALYSIS OF CASUALTY  
DEPARTMENT DATA, ST. LUKE'S  
HOSPITAL, 1994**

Cauchi M.N, Dept. of Pathology,  
University of Malta, Medical School, St.  
Luke's Hospital

**SUMMARY**

Motor vehicle accidents (MVAs) referred to St. Luke's Hospital Casualty Department were analysed. There were 616 MVAs referred to hospital during the year, an incidence of 170 per 100,000 at the population. There were 3 peak accident rate, namely, one early in the morning, a second around mid-day, and a third around 6 pm. The majority (55%) involved young persons under the age of 30 years. The risk of hospitalisation was highest for males in the 20-29 age group (480/100,000). Nearly one third required hospitalisation for more serious injuries.

This analysis emphasises the need for urgent measures to be taken to reduce the rate of MVAs and associated morbidity.

**INTRODUCTION**

The number of motor vehicle accidents is increasing at an alarming rate. This has resulted from a number of factors. In Malta, there is currently one car for every two residents (see Brockdorff 1995). Moreover, Maltese drivers have become more mobile, using their car more frequently, and younger in age as a

result of the increasing purchasing power of the individual.

Studies relating to the incidence and pattern of car accidents in Malta are not readily available (see Camilleri 1969). In this study, an analysis of MVA casualties admitted to the Casualty Department of St. Luke's Hospital over a period of one year (1994) was carried out with a view to determine patterns which were significantly related to increased traffic accidents.

**MATERIALS, METHODS**

The registers of the Casualty Department, St. Luke's Hospital, were examined for the year 1994. The following information was obtained.

Age, sex, place of residence, date and time of accident, and outcome (whether discharged or transferred to a hospital ward)

Data was stored on a data-base and analysed using a statistical analysis package (Manugistics Statgraphics Plus).

Risk of admission to SLH for injury for MVAs was defined as:

*Number of persons admitted during a defined time*

-----  
*Number of persons in that age/sex bracket in the Maltese population*

## RESULTS

The number of injuries resulting from motor vehicle accidents admitted to St. Luke's Hospital (MVAs) per month varied from a low of 21 in May to a high of 97 in July (table 1, fig 1). As expected, there is a considerable male preponderance, with male:female ratios ranging from 1.4 to 3.2. There does not seem to be a seasonal distribution in this ratio.

There was a preponderance of accidents in the early hours of the morning. In males, the period from midnight till 4.00 am accounted for 28.5% of all accidents. There was a second peak during late morning another around 6 pm. In females, the periods between 4 and 6 pm accounted for the highest relative proportion of accidents (fig 2, table 2).

The majority of accidents involved young persons under the age of 30 - in fact, 64% of injuries involved persons in this age group, with a sharp drop after the age of 30 years (fig 3, table 3). There were 185 MVAs involving persons under the age of 20 years (33%), and 171 between the age of 20 and 30 years (23.4). For the 20-29 age group, the risk of hospitalisation was 480/100,000 in males and 199/100,000 in females and was only slightly less for the 10-19 age group (373 and 181 respectively).

There were significant variations in the incidence of hospitalisation rates between

the days of the week, with Sundays showing the highest incidence (21%) (Table 4).

A measure of the degree of severity of the MVA may be obtained from an analysis of the discharge rates after attending the Casualty Department: obviously, those transferred to one of the hospital wards would account for the more severe cases. Table 5 shows that nearly 29% of all MVA were referred. The proportion of males was slightly higher than that for females, but this was not statistically significantly.

Table 6 gives an analysis by area of residence, for localities where the total number of MVAs was 10 or more. When expressed as a proportion of the total population residing in the particular locality, it is seen that certain areas of residence are associated with a greater than expected incidence of MVAs. For instance, Floriana, Marsascala, St. Julians, Santa Lucia, Msida and St. Pauls Bay (Bugibba) were associated with a MVA rate of more than 3 per 1000 population, whereas at the other end of the scale, Paola, Rabat Qormi, Mosta and Zejtun and Hamrun had less than 1.5 per 1000 ( $X^2 = 64.5$ ;  $P < .001$ ).

## DISCUSSION

This study represents an analysis of motor vehicle accidents presenting at SLH during a period of one year. There were 616 MVAs treated during this year, representing 170 per 100,000 population. It is important to bear in mind that this represents only a proportion of MVAs and does not include the considerable number

of minor accidents that do not require hospitalisation.

It is of interest to note that while June and July saw peak MVA rates, August was a relatively quiet month (with 43 MVA incidents, less than the number in February). Thus the distinction between the "busy" summer months and the rest of the year is not so clear-cut. The reasons for this low incidence in this relatively busy month are not clear, and could be due to random variation from year to year. Analysis over a number of years would be required before an analysable pattern can emerge.

The time distribution of MVAs calls for comment. There were three distinct peaks seen in the rate of accidents, namely (a) early hours of the morning, (b) around mid-day, and from 4-7 pm. While the daytime accidents might be correlated with the increase in motor traffic on the roads, the early morning peak is more likely to be associated with a younger age group. Possible factors accounting for this unnecessary loss of life include the following:

- a. the marked tendency for Maltese youths to indulge in late night entertainment, particularly on a weekend, and, in the summer months, throughout the week.
- b. the increased tendency to drink, which is now being offered in bulk (Disco clients are being offered the option of paying a once only fee of Lm10.00 and drink all they can).
- c. increased availability of motor cars for younger age group drivers. Increased affluence has been a major factor in this phenomenon.

In fact, one of the most obvious findings in this study in comparison with the study carried out by Camilleri relating to traffic accidents in 1967 is the presence of the early morning peak of accidents which was non-existent at that time.

The day-to-day variation was significant, with lowest incidence during Monday-Wednesday and increasing for the rest of the week with a peak on Sunday (which includes the Saturday night / Sunday morning MVAs).

Whether there exists an accident-prone personality is difficult to prove. A recent study from Finland (Hilakivi et al, 1989) has shown that young male persons involved in traffic accidents are more likely to show impassivity, adventurousness, naivete, excessive trustfulness, and depression - factors relating to the control of emotions.

It is to be noted that wherever statistics over a long period of time have been analysed, the conclusion is confirmed that there is a tendency for accident death rates to increase over all ages, but the most striking increase is likely to affect youths aged 15-24 years of age (Millar & Last, 1988). These findings have been confirmed in Malta in a recent study (Galea, 1992). Any preventative aspects must take this into consideration, and special effort should be made to investigate the factors that could possibly be responsible for this escalation of this specific type of MVA.

The value of wearing seat belts in preventing serious injury has been emphasised again in a number of studies. For instance, Orsay et al (1988) conclude that "safety belt wearers had a 60.1%

reduction in severity of injury, a 64.6% decrease in hospital admissions, and a 66.3% decline in hospital charges, emphasising the increase cost of medical care required for non seat-belt wearers.

The higher than expected incidence of MVAs associated with certain localities is of interest. Residents at Floriana, M'Scala St. Julians, Santa Lucia, Msida and St. Paul's Bay (Bugibba) are 2-3 times more likely to be involved in MVAs than residents of Paola, Zejtun, Rabat, Qormi, Zurrieq or Hamrun (table 6). It is to be emphasised that these are residential addresses and not accident localities, and therefore do not necessarily relate to local road or traffic conditions, although it is reasonable to argue that residents of high density traffic areas are more likely to be involved in car accidents than those residing in more rural areas. More study would be required to confirm these findings and to ferret out those factors associated with this increased accident rate.

While this study is restricted to only one year's MVAs, the pattern of accidents found is likely to be repeated. Efforts to reduce the number of MVAs must start with an analysis of the factors that lead to these accidents. While it was not the aim of this study to tease out these factors, serious efforts must be made by the relevant authorities to ensure that the multiple factors involved in car accidents as highlighted in the daily press (see eg. Cauchi M.N. 1995) are analysed and dealt with:

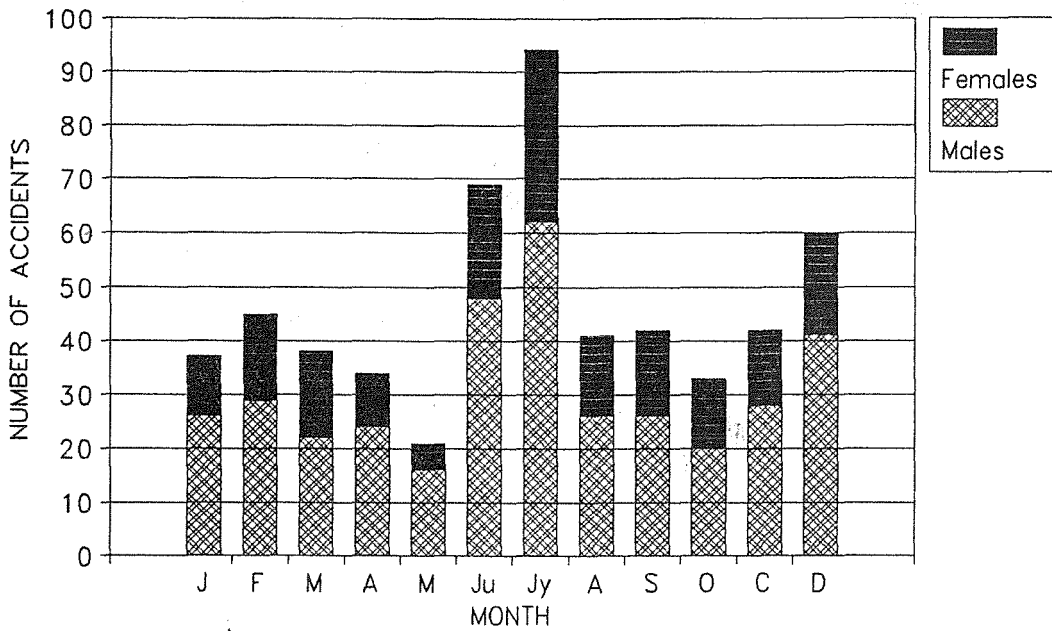
## REFERENCES

- Brockdorff P.V. 1995: "Facts, Figures and myths on Malta", The Sunday Times, February 12, p6.
- Cauchi M.N. 1995: "Road Carnage: Need for Action" The Sunday Times, March 5, p39
- Camilleri V.T. 1969: "Traffic Injuries in Malta - some considerations and suggestions. The St Luke's Hospital Gazette. vol iv, p 19-27
- Galea G.: 1992: "A Youngman's Death" An Analysis of Premature Mortality in Malta. University of Malta.
- Hilakivi I., Veilahti J: Asplund P., Sinivuo J., Laitinen L., Koskenvuo K. (1989): "A sixteen factor test for predicting automobile driving accidents of young drivers" *Accid Anal Prev.* 21, 413-418.
- Millar W.J., Last J.M. (1988), "Motor vehicle traffic accident mortality in Canada, 1921-1984. *Am. J. Prev. Med.* 4(4) 220-230.
- Orsay E.M., Turnbull T.L., Dunne M., Barrett J.A., Langenberg P., Orsay C.P.: (1988): "Prospective study of the effect of safety belts on morbidity and health care costs in motor-vehicle accidents. *J A M A*, 260, 3598-3603.

**Table 1: Number of persons hospitalised following motor vehicle accidents, by time of occurrence.**

Time	Male		Female		Total		M/F Ratio
	N	%	N	%	N	%	
0	113	28.5	54	25.3	167	27.6	2.1
4-	46	11.6	14	6.6	63	9.8	3.3
8-	68	17.2	38	17.8	106	17.4	1.8
12-	45	11.4	21	9.8	66	10.8	2.1
16-	73	18.4	56	26.4	129	21.2	1.3
20-	51	12.9	30	14.1	81	13.3	1.7

### MVA :ADMISSIONS SLH BY MONTH



**Figure 1: Monthly variation in the number of admissions to St Luke's Hospital Casualty Department**

## MVA: ADMISSIONS SLH by age and sex

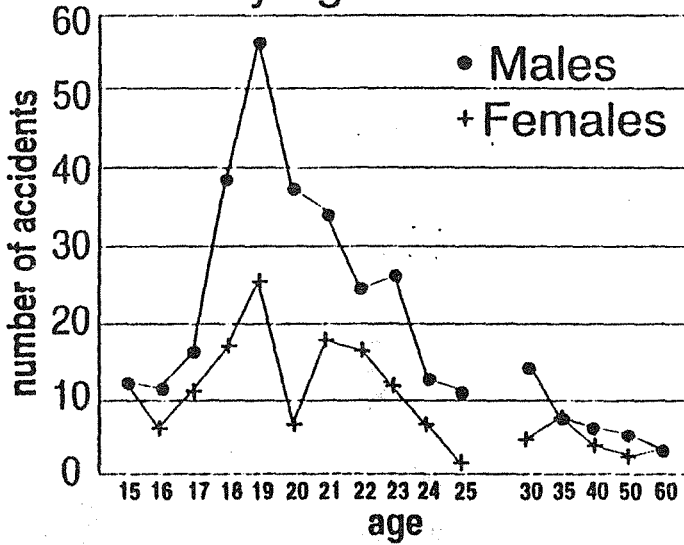


Fig 2: Variation in admission to SLH by age and sex. Note the sharp peak for males aged 18-20 years of age.