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CAR OCCUPANTS ACCIDENTS AND INJURIES AMONG ADOLESCENTS IN A STATE IN MALAYSIA

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Abstract
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This cross sectional, school based study was carried out in four districts in Selangor, Malaysia, using pre-tested, self-administered questionnaire. A systematic sampling method was used to select the participating schools. There were 601 from 618 respondents. Response rate was 97.2%. Forty-one students were involved in road traffic accidents as car occupant with prevalence of 6.8% and only 14 students reported having injuries (2.3%).There was no significant association between car occupant injuries and gender (OR 1.604, 95% CI 0.549 –4.689) and race (Malay/non Malays) (OR 1.633, 95% CI 0.539 –4.950). There was a significant association between car occupant injuries and not having driving lessons, (OR 3.880, 95% CI 1.203 –12.519), not having driving license (OR 5.342, 95% CI 1.185 –24.078). However there was no significant association between car occupant injuries and not using seat belts (OR 0.715, 95% CI 0.197 –2.598).

Key Words : Car occupant accidents, Car occupant injuries, Late adolescents, Students, Safety belt

1. INTRODUCTION

Road traffic accidents and injuries is a public health problem worldwide. In 2002, 1.2 million people die as a result of road traffic accidents and 50 million are injured and disabled. It is also the eleventh cause of death in the world and accounts for 2.1% of all deaths globally (World Report on Road Traffic Injury Prevention, 2004).

Injuries including road traffic accidents is third cause of admission and fifth cause of death in Malaysian government hospitals in 2003. In the year 2003 about 17 people are killed a day. (Health Facts, 2003). The incidence rate of motor vehicle accidents in Malaysia 2000 was 107.64 per 10,000 population (Ministry of Health Malaysia. Malaysia's Health 2002). Motorcars are most commonly involved, followed by motorcycles, lorries/vans (Royal Malaysian Police 2004).

Road traffic accidents is a recognized dominant cause of injury and death among teenagers world wide and in Malaysia. A national study in 1996 reported that most of the road injuries occurred among 10-19 years (31.0%), followed by 20-29 years of age. Death were more common among the young adults, followed by adolescent (Epidemiology of Injuries 1997). In the year 2000, adolescent between 16-20 years were the majority (16.37%) of those who were involved in road traffic accidents. This was followed by those between 21-25 years (15.43%)(Royal Malaysian Police 2004).

There is great lost in potential healthy years of life of productivity among the youthful group. There is also minimal information on safety practices particularly among adolescent who are also a major road user in the country. The present study was to determine the prevalence of road traffic injuries involving motorcar occupants among the upper six students in Selangor. It also determines the association between the injured motorcar occupants with related safety factors like using the seat belt, having driving lessons and having driving license.

2. METHODOLOGY

This cross sectional, school based study was carried out in the year 2003 using a multistage stratified sampling method using the list of government schools with upper six classes provided by the Department of Education of Selangor.

2.1. Study location

This is a cross sectional study carried out in government day schools in the state of Selangor, Malaysia. There are nine districts in the state of Selangor, Malaysia. Four districts, Klang, Hulu Langat, Petaling and Gombak were selected randomly.

2.2. Study participant

There are two levels of education in Malaysia. Primary level is from standard 1 to standard six (7 to 12 years) and secondary level is from form 1 to upper six (13 to 20 years). Upper six class is the highest school education before the student enters the university for their tertiary education. Government schools with the highest number of form six classes were identified and twelve schools were selected using the list of schools provided by the Selangor Education Department. The individual schools provided the class registers. All the students registered in the form six

classes were included in this study. Students who were absent on the day of the survey were not included.

2.3. Data collection

A self-administered questionnaire adapted from the Motor-vehicle Occupant Safety Survey, 1998 was used after pre-testing (NHSA, 1998). Our study analysed data on road traffic accidents involving motorcars occupant (drivers and passengers) occurring within the last 12 months.
Questionnaires were administered in classrooms to the willing participants, in examination conditions with students' desks separated to avoid discussion. A briefing was given by one of the authors prior to the survey. Questionnaires were completed in the absence of the teachers. Students' anonymity was protected through confidential conditions.

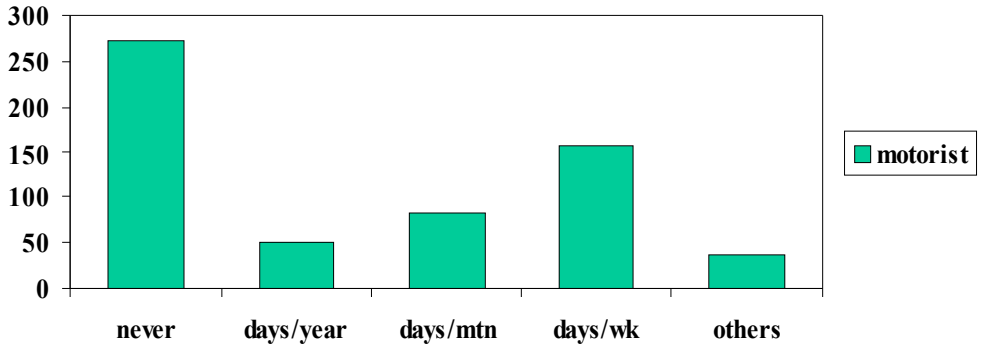
2.4. Statistical Analysis

Data were analysed using Statistical Package for Social Sciences (SPSS) version 11.5 with univariate and bivariate comparisons. P value below 0.05 was considered as statistically significant.

3. RESULTS

There were 601 out of 618 students who participated in this study and the response rate was 97.2%. There were 193 males (32.1%) and 408 females (67.1%). There were 154 Malays (25.6%), 282 (46.9%) Chinese, 156 (26.0%) Indians and 9 (1.5%) others.
Among the 601 students 273 (45.4%) have never driven a car, 51 (8.5%) drives a few days in a year, 82 (13.6%) drives a few days in a month, 159 (26.5%) drives a few days in a week and 36 (6.0%) as others as in Figure 1.

Fig. 1: Frequency of driving among adolescent



Forty-one students have been involved in road traffic accidents as car occupant in the last year with prevalence of 6.8%. Among them, 14 (2.3%) sustained injuries as a result of the accident. Majority of those involved in the accidents, 18 (43.9%) hit another car, 17 (41.5%) hit a non-

moving object, 2 (4.8%) hit a lorry and 2 (4.8%) skidded, hit a bicycle and motorcycle (5%). The injuries sustained were abrasions, concussion, puncture wounds, muscle sprain and strain. There were no significant association between car occupant injuries with gender (OR 1.604 (0.549 – 4.689) and race (Malays vs non-Malays OR 1.633, 95% CI 0.539 -4.950) as in Table 1 Seven percent (10) did not attend school as a result of the accidents, majority for not more than 2 days.

Table 1. The Gender and Race of the Respondents (Injured car occupants and others)

	Car occupants injured(%)	Others(%)	95% confidence interval
Gender			
Males	6 (3.1)	187 (31.9)	1.604
Females	8 (2.0)	400 (68.1)	(0.549 – 4.689)
Race			
Malays	5 (35.7)	149 (25.4)	1.633
Non-Malays	9 (64.3)	438 (74.6)	(0.539 – 4.950)

*P<0.05

There was a significant association between car occupant injuries and not having a driving lessons, (OR 3.880, 95% CI 1.203 –12.519), not having driving license (OR 5.342, 95% CI 1.185 –24.078). However there was no significant association between car occupant injuries and not using seat belts (OR 0.715, 95% CI 0.197 –2.598) (Table 2).

Table 2 : Risk Factors among the Injured Car Occupants

	RTA(%)	No RTA (%)	95% confidence interval
Car Driving lessons			
No	4 (28.6)	357 (60.8)	3.536
Yes	10 (71.4)	230 (39.2)	(1.792 – 6.976)*
Having a car drivers license			
No	2 (14.3)	276 (47.1)	5.352
Yes	12 (85.7)	310 (52.9)	(2.212 – 12.949) *
Seat belt usage			
Seldom	3 (21.4)	162 (27.6)	0.715
always	11 (78.6)	425 (72.4)	(0.197 – 2.598)

*P<0.05

Among the participants, 243 have never driven (40.4%), 194 (32.3%) always use seat belt, 106 (17.6%) often, 50 (8.3%) sometimes and 8 (1.3%) never use seat belts while driving. The reasons given for wearing the seat belts were prevention of injuries and fear of being fined (Table 3). Driving for short distance, forgetfulness, seat belts are uncomfortable, in a hurry, driving in a non busy area were the reasons for not using the seat belts (Table 4).

Table 3: Reasons for Using Seat Belt among the Respondents

Reasons	Number	Percentage
Prevent from injuries	211	35.1
Fear of being fined	128	21.3
Because it is the regulation	111	18.5
A habit	102	17.0
Others	41	6.8

Table 4: Reasons for Not Using Seat Belt among the Respondents

Reasons	Number	Percentage
Driving short distance	314	52.2
Forgot to put on	274	45.6
Seat belts are uncomfortable	177	29.5
In a hurry	166	27.6
Driving in a not busy area	160	26.6
Chances of accident is low	121	20.1
Do not want clothes creased	81	13.5

4. DISCUSSION

Our study shows that the majority of the upper six students drives and 26.5% drives a few days in a week. However the prevalent of car occupants accidents for the past 1 year was 6.8% and car occupant injuries was 2.3%. The injuries sustained were minor injuries and they did not stay away from school for a long period. Being new license holders, the adolescent are more careful so that their license will not be evoked. In 1995, young new 16 year old drivers in the United States were involved in 35 crashes per million miles of travel as compared to 20s and early 40s drivers. Immaturity, inexperienced particularly in the necessary driving skills and capabilities were the main reasons postulated (Mayhew DR, 2002). The Swedish national road traffic accidents showed large reduction of fatality and accidents leading to serious injuries when the age of attaining driving license was increased from 18 years to 24 years (Statistics Sweden). The accident rate peaked at 19 years and declined at age 20 and 21. There were more older people who were license holders as compared to the 19 year old (Murray A, 2003).

Driver education, provides learning to drive and preparing the road test in order to produce safer drivers**.** Our study shows that not having driving lessons is associated with having injuries as motorcar occupants. The formal driving lessons among these adolescent is quite recent (1-2 years) and that could make them more cautious when they are driving. And they avoid from getting involved in accidents. However a review of 30 studies from several countries reported that

formal driving education did not have low frequency of road traffic accidents. Another review from John Hopkins School of Public Health and the Cochrane Injuries group in the United Kingdom also reported no convincing evidence from undergoing driver education (Mayhew 2002).

There was a significant association between having injuries as motorcar occupants and not having driving license (OR 5.342, 95% CI 1.185 –24.078). There is lack of driving skills and experience among those who did not have driving license and driving lessons. Once a person acquires a driving license in Malaysia they are still on probation for two years before they can receive their normal driving license. Most new probation licensed drivers are more careful as they do not want to loose their driving status and opportunity at an early stage.

Seat belts effectively reduces serious injuries and deaths. In our study majority of the students used seat belts to prevent from injuries, followed by fear of being fined. The reasons given for not using the seat belts were driving short distances, forgetfulness, were in a hurry. However, there was no significant association between car occupant injuries and not using seat belts (OR 0.715, 95% CI 0.197 –2.598). In our study sample most of the occupants did not sustain any injuries or received only superficial minor injuries.
Teenage driver and front seat passengers are less likely to use seat belts as compared with older drivers (Preusser,1987).Teenage usage of seat belt is low (Williams, 1997). Safety belt usage was higher in primary enforcement cities of Boston, Chicago, Houston and New York (Wells JK, 2002). Analysis of national probability sample of the United States 1992, usage of seat belt among 12 -13 year, 14-17 year and 18-21 years reported 45.6%, 19.8% and 10.2% respectively (Brener ND, 1998). The fatality rate for the non-users of seat belts were six times greater than that of the belt users for all ages in Kuwait. The non-users required more surgeries and received more abdominal and facial injuries (Koushki PA, 2003). A study in new Zealand reported seat belt use as a driver (91%), front seat passenger (93%) and rear seat passenger (40%). One of the main reasons given for not using seat belts was ‘not in the habit’ (Begg DJ, 2000).

The current study can be generalized to all form six students in Selangor. However it cannot be generalized for the late adolescents who are out of school, or attending private schools who tend to have a different and states of vulnerability towards driving. Being a self-report, there is the possibility of underestimation of road traffic accidents. A prospective study of these students with driving lessons and driving license who later graduate to the outside world would be very useful in understanding further the trends of road traffic accidents and safety practices among young people.

5. CONCLUSIONS

Our study shows that even though 26.5% of the respondents drive, the prevalence of car occupant accidents for the last year was 6.8% and car occupant injuries was 2.3%. There was a significant association between car occupant injuries with not having a driving license and driving lessons. However, there was no significant association car occupant injuries and not using the seat belt.
Parents can help reduce motor car accidents as they determine when their children are ready to get a driving license and in what vehicle they can drive. Schools have a role to play by emphasizing

the importance on road safety, like usage of seat belts, proper driving practices particularly to the late adolescent as they will be active road users very soon.

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