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Socio-Demographic Profile and Severity of Head Injury Among Victims of Road Traffic Accidents in Aligarh

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ABSTRACT

A hospital based cross-sectional study was conducted in casualty and allied departments of JNMCH, Aligarh. The aim was to study the socio-demographic profile and severity of head injury among victims of RTA. All admitted cases of RTA with head injury in the age-group 15-45 years from August 2010 to July 2011 were included in the study using purposive sampling. A total of 463 cases of RTA with head injuries were studied. There was a marked male preponderance (81.2%) and the most vulnerable age group was 20-24 years. Majority (74.5%) belonged to Hindu community. Head injury was more frequent in married patients (56.8%). Higher number of patients (59.8%) belonged to rural areas. Majority of the patients were literate and 30.2% were unemployed. Maximum risk of RTA was found in upper-lower class (55.1%). Majority of head injuries noted were mild (74.8%). Severely injured (8.0%) were least in number.

KEYWORDS: RTA, head injury

Introduction:

Road traffic accidents (RTAs) have become a growing public health and development problem. Land transportation systems have become a crucial component of modernity. Transportation is increasingly associated with the rise in road accidents and premature deaths, as well as physical and psychological handicaps. Equally significant are the rising costs in health services and the added burden on public finances. In developing countries the situation is made worse by rapid and unplanned urbanization.

About 1.2 million people die every year due to road traffic injuries (RTIs) worldwide and 50 million more are injured. Global mortality is 97/100,000 population. About 850,000 are under 45 years of age, who are the sole breadwinners for their families in most of the developing countries. Every day, there are 3300 deaths and 6600 serious injuries on the road (Madan, 2006). In India, 12.75 lac people sustain serious injuries in RTAs and 1.2 lac die every year. More people die in road accidents in India than anywhere else in the world, including the more populous China. India accounts for about 10% of road accident fatalities worldwide (World Health Day, 2004). Of these, 60-70% are between 14 and 45 years of age. Economically active adults aged 15-44 years, account for more than half of all road traffic deaths. Thus to supplement the previous studies and to help the policy-makers in implementing evidence-based strategies to prevent such accidents in future the present study is planned in 15-45 years age-group patients reporting to Jawaharlal Nehru Medical College Hospital, Aligarh Muslim University, Aligarh following road traffic accident with head injury.

Materials and methods:

The present hospital based cross-sectional study was conducted in casualty and neurosurgery ward of Department of Surgery, Jawaharlal Nehru Medical College Hospital, Aligarh Muslim University, Aligarh from August 2010 to July 2011 for a period of one year. Study unit was individual and study subjects included all the patients of RTAs with head injury in age-group 15-45 years admitted to this hospital over one year. Subjects were included using purposive sampling.

The criteria of inclusion was to include all patients of RTAs with head injury in age-group 15-45 years who have registered themselves in casualty and admitted to Jawaharlal Nehru Medical College Hospital. The patients excluded were those not giving consent to be a part of study, patients who were immediately referred to higher centre, patients who were brought dead and those below 15 years and above 45 years of age. Clearance was acquired from Ethics Committee to conduct the present study. Informed consent was taken from patient or concerned attendants or relatives after they were assured that confidentiality would be maintained. After the interview thorough clinical examination of patient was done and CT scan were looked for.

For assessment of Socio-economic status Modified Kuppuswamy's socio-economic status scale was used in the present study. Assessment of the degree of injury was done with the help of Glasgow coma scale (GCS). Patient was assessed on first contact by the doctor on duty and was classified into mild, moderate or severe injury as per GCS score. On computing the three components of GCS together a final score was formed with following inference- GCS (13-15) as mild injury, GCS (9-12) as moderate injury and GCS (3-8) as severe injury Data was analyzed using the SPSS version 17. Operational definition of Road Traffic Accident used in study was as follows: A collision involving at least one vehicle in motion on a public or private road that results in at least one person being injured or killed (Patil, Kakade, Durgawale and Kakade 2008, WHO: World report., 2004).

Results:

Table-1. Distribution of age group with gender

Age group (yrs)	Gender		
	Male	Female	Total
	N(%)	N(%)	N(%)
15-19	72(15.6 %)	20(4.3 %)	92(19.9 %)
20-24	102(22.0 %)	19(4.1 %)	121(26.1 %)
25-29	6(1.3 %)	1(0.2 %)	7(1.5 %)
30-34	67(14.5 %)	11(2.4 %)	78(16.9 %)
35-39	46(9.9 %)	14(3.0 %)	60(12.9 %)
40-44	83(17.9 %)	22(4.8 %)	105(22.7 %)
Total	376(81.2 %)	87(18.8 %)	463(100.0 %)

Highest number of patients (26.1%) were in age group 20-24 years followed by 40-44 years accounting for 22.7%. Least number patients were in age group 25-29 years (1.5%) (Table-1).

Table-2. Distribution of socio-demographic profile with gender

Socio-demographic factors	Gender		
	Male	Female	Total
	N(%)	N(%)	N(%)
A.Religion			
Hindus	288(62.2 %)	57(12.3 %)	345(74.5 %)
Muslim	87(18.8 %)	30(6.5 %)	117(25.3 %)
Other	1(0.2 %)	0(0%)	1(0.2 %)
Total	376(81.2 %)	87(18.8 %)	463(100.0 %)
B.Marital status			
Married	196(42.3 %)	67(14.5 %)	263(56.8 %)
Unmarried	180(38.9 %)	20(4.3 %)	200(43.2 %)
Total	376(81.2 %)	87(18.8 %)	463(100.0 %)
C.Residence			
Urban	152(32.8 %)	34(7.4 %)	186(40.2 %)
Rural	224(48.4 %)	53(11.4 %)	277(59.8 %)
Total	376(81.2 %)	87(18.8 %)	463(100.0 %)

Majority of study population comprised of Hindus (74.5%), most of them married (56.8%) and belonged to rural areas (59.8%) (Table-2).

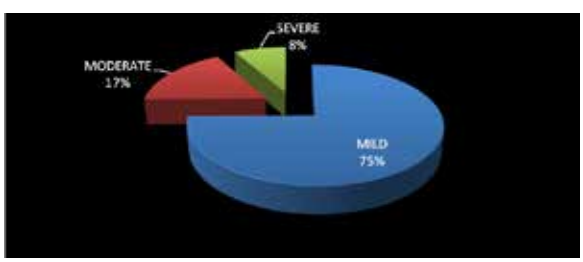
Literate patients comprised the largest group. Educated upto high school and above constituted 78.8 % of total patients. 2.6% of patients were illiterate. Unemployed formed the largest group (30.2 %) with regard to occupation. However majority of them (28.7%) were either students or homemaker. Maximum risk of RTA was found in upper-lower class (55.1%) i.e. class IV followed by lower-middle class (40.6%) i.e. class III (Table-3).

Table-3. Distribution of socio-economic factors with gender

Socio-economic factors	Gender		
	Male	Female	Total
	N(%)	N(%)	N(%)
A.Education			
Illiterate	10(2.2 %)	2(0.4 %)	12(2.6 %)
Primary	28(6.1 %)	7(1.5 %)	35(7.6 %)
Middle	34(7.3 %)	17(3.7 %)	51(11.0 %)
High school	127(27.4 %)	35(7.6 %)	162(35.0 %)
Secondary	65(14.0 %)	10(2.2 %)	75(16.2 %)
Graduate and above	112(24.2 %)	16(3.4 %)	128(27.6 %)
Total	376(81.2 %)	87(18.8 %)	463(100.0 %)
B.Occupation			
Unemployed	64(13.8%)	76(16.4%)	140(30.2%)
Unskilled	45(9.7%)	0(0%)	45(9.7%)
Semiskilled	99(21.4%)	2(0.4%)	101(21.8%)
Skilled	37(8.0%)	2(0.4%)	39(8.4%)
Clerical/ shopowner/ farmer	119(25.7%)	5(1.2%)	124(26.9%)
Semiprof./prof.	12(2.6%)	2(0.4%)	14(3.0%)
Total	376(81.2%)	87(18.8%)	463(100.0%)
C.Socio-economic class*			
II(upper-middle)	8(1.7 %)	3(0.7 %)	11(2.4 %)
III (lower-middle)	179(38.7 %)	9(1.9 %)	188(40.6 %)
IV (upper-lower)	185(40.0 %)	70(15.1 %)	255(55.1 %)
V (lower)	4(0.9 %)	5(1.1 %)	9(1.9 %)
Total	376(81.2 %)	87(18.8 %)	463(100.0 %)

***As per Modified Kuppuswamy's socio-economic status scale**

Figure-1. Distribution of severity of head injury



In the present study out of total 463 patients GCS could not be assessed in two patients because of overwhelming effect of alcohol thereby GCS was considered in 461 patients only. Out the remaining 461, 345 (74.8%) were classified as mild, 79 (17.2%) as moderate and 37 (8.0%) as severely injured (Figure-1).

Table-4. Severity of head injury with socio-demographic profile

	Glasgow coma scale				
	Mild	Mod.	Severe	Total	P-value
Age (years)					
15-19	70(76.1%)	12(13.0%)	10(10.9%)	92(100.0%)	0.010
20-24	93(76.9%)	19(15.7%)	9(7.4%)	121(100.0%)	
25-29	1(14.3%)	4(57.1%)	2(28.6%)	7(100.0%)	
30-34	61(78.2%)	9(11.5%)	8(10.3%)	78(100.0%)	
35-39	45(76.3%)	10(16.9%)	4(6.8%)	59(100.0%)	
40-44	75(72.1%)	25(24.0%)	4(3.8%)	104(100.0%)	
TOTAL (n=461)	345	79	37	461	
χ^2=23.175; d.f.=10					
Gender					
Male	276(73.8%)	66(17.6%)	32(8.6%)	374(100.0%)	0.527
Female	69(79.3%)	13(14.9%)	5(5.7%)	87(100.0%)	
TOTAL (n=461)	345	79	37	461	
χ^2=1.282; d.f.=2					
Residence					
Urban	138(74.2%)	29(15.6%)	19(10.2%)	186(100.0%)	0.315
Rural	207(75.3%)	50(18.2%)	18(6.5%)	275(100.0%)	
TOTAL (n=461)	345	79	37	461	
χ^2=2.313; d.f.=2					

Mild injury was commonest in all age groups except in 25-29 years age-group. Also in 40-44 years moderate injury was more as compared to other groups with 24.0%. Association of two came out to be significant (p-value<0.05) (Table-4). The distribution of three grades of injury was same in both gender and place of residence with no significant difference between either group.

Discussion:

Young age group comprising 15-45 years is at increased risk of RTA with head injury as also noted by (Agnihotri and Joshi, 2006) and (Khan, Hanif, Hussain, Huda and Sabri, 2011). Males are at increased risk due to more exposure because of outdoor activities. Similar findings were noted in other study (Wong, Chong, Tai and Lau, 2009). Jha, Srinivasa, Roy and Jagdish (2004) also noted similar figures. Religion and marital status have not been directly linked to RTA and have been noted differently where 51.67% of the patients were unmarried and 48.33% were married (Mishra, Sinha, Sukhla and Sinha, 2010). Increased risk has been noted in non-urban settings due to poor conditions predisposing to RTAs. Ackaah and Adonteng (2011) and Shah, Khoumbati and Soomro (2007) found more RTAs in rural areas. Increase in literacy level provides no immunity to RTAs as noted (Mishra et al, 2010) and students tend to be involved more often due to high risk behaviour (Jha, Yadav, Karn, Aggrawal and Gautam, 2010). Upper social class is more involved in RTAs as also noted by (Tiwari and Ganveer, 2008). This may be due to their higher possession of vehicles.

Conclusion:

Young males are at increased risk of RTA leading to head injury therefore this group needs to be specially addressed. An increase in literacy level and socio-economic class does not seem to decrease the risk involved in RTAs.

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