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RESEARCH ARTICLE

A STUDY OF THE FACTORS ASSOCIATED WITH SEVERITY OF ROAD TRAFFIC INJURIES IN THE EMERGENCY MEDICINE DEPARTMENT IN KOLKATA, INDIA.

Dr. Sambit Maiti, Dr. Indraneel Dasgupta, Dr. Subhendu Das and Dr. Arif Ishtiq Mattoo.
Institute Of Emergency Medicine, Peerless Hospital and B. K Roy Research Center Kolkata.

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Abstract

Introduction: World Health Organization defines road traffic injury (RTI) as a fatal or non fatal injury incurred as a result of a collision on a public road involving at least one moving vehicle and pedestrians. It is a major but neglected public health challenge that requires concerted efforts for effective and sustainable prevention. Worldwide, an estimated 1.2 million people are killed in road crashes each year and as many as 50 million are injured. Nevertheless, the tragedy behind these figures attracts less mass media attention than other, less frequent types of tragedy [1].

Aim: To study the Socio demographic Characteristics of the Study Population with Incidence of the Road Traffic Injury and Factors Associated with Road Traffic Injury.

Methodology: This is a Institutional, prospective cross-sectional questioner based study conducted at the Emergency Department of peerless hospital and research centre kolkata. This study was conducted in the Emergency Department of Peerless Hospital And Research Centre Kolkata from March 2016, to August 30, 2017, hospital having a 24-hour Emergency Service after taking ethical clearance from ethical committe and proper consent.

Results: Proportion of victim having conflict with family members (20.39%) is significantly lower than proportion not having any conflict with family members (79.61%) with P value 3.38e-09 (< 0.05); Proportion of victim with psychological problems (27.18%) is significantly lower than proportion without any psychological problems (72.82%) with P value 5.83e-06 (< 0.05); Proportion of victim uses alcohol (62.07%) is significantly higher than proportion not uses any alcohol (37.93%) with P value 0.03201 (< 0.05); Proportion of cases ambulance (21.36%) used as mode of transportation is significantly lower than the proportion other modes of transportation (78.64%) used with P value 1.098e-08 (< 0.05); Proportion of victims from poor (40.78%), middle (50.49%) and high (8.74%) financial status differ significantly with P value 3.937e-07 (< 0.05). Proportion of victims from high financial status is significantly lower than the middle with P value 3.679e-08 (<0.05) and also lower than poor with P value 3.82e-06 (< 0.05). Proportion of victims from poor and middle financial status do not vary significantly with P value 0.3023 (>0.05). Proportion

Corresponding Author:- Dr. Sambit Maiti
Address:-Institute of Emergency Medicine,Peerless Hospital and B. K Roy Research Center Kolkata.

of victim shifted to Healthcare centers by ambulance (21.36%, 95% CI 13.44% - 29.27%) is significantly lower than proportion shifted using other modes of transportation (78.64%, 95% CI 70.73% - 86.56%) with P value 1.098e-08 (< 0.05); Ambulance service as mode of transportation to Healthcare center of Mild (17.65% 95% CI 0.00% - 35.77%), Moderate (10.00%, 95% CI 0.00% - 24.26%) and severely (38.89%, 95% CI 15.72% - 62.06%) injured victims varies significantly with P value 0.005076 (>0.05). test statistic used chi-square test for proportions.

Conclusion: Results clearly shows that a large number of people who came with RTA have alcohol influence but not related with severity of injury and the health care need to be improved in regard to transport facilities as it is clearly demonstrated that very less people use ambulance service for mode of transport.

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Introduction:-

World Health Organization defines road traffic injury (RTI) as a fatal or nonfatal injury incurred as a result of a collision on a public road involving at least one moving vehicle and pedestrians. It is a major but neglected public health challenge that requires concerted efforts for effective and sustainable prevention. Worldwide, an estimated 1.2 million people are killed in road crashes each year and as many as 50 million are injured. Nevertheless, the tragedy behind these figures attracts less mass media attention than other, less frequent types of tragedy [1]. Furthermore, according to the World Health Organization, the number of road traffic deaths is expected to increase by 80% up to 2020 [2]. Globally, road traffic injuries are ranked ninth among the leading causes of disability adjusted life years lost (DALY), and their ranking is projected to rise to third by 2020 [3, 4]. World report on road traffic injury showed that the number of road traffic injuries has continued to rise in the whole world, but there has been an overall downward trend in road traffic deaths in high-income countries since the 1970s and an increase in many of the low-income and middle income countries. Deaths related to RTI are predicted to increase by 83% in low-income and middle-income countries and to decrease by 27% in high-income countries. 90% of road traffic deaths occurred in low-income and middle income countries, where 81% of the world's population live and own about 20% of the world's vehicles [5]. African countries had the highest mortality rate, with 28.3 deaths per 100 000 populations [6]. While road traffic accidents account for about one-quarter of injury-related deaths in the continent overall. The most economically active people (aged 15–59) are at the greatest risk of dying as a result of RTI. For this age group, road traffic accidents affected more than three times as many males as females. Deaths due to road traffic accidents among males aged 15–59 far exceed those due to malaria, diabetes mellitus, and respiratory or digestive diseases [7] and the incidence in India is 35.2% in India.[12]

Materials and Methods:-

This is a Institutional, prospective cross-sectional questioner based study conducted at the Emergency Department of peerless hospital and research centre Kolkata. This study was conducted in the Emergency Department of Peerless Hospital And Research Centre Kolkata from March 2016, to August 30, 2017, hospital having a 24-hour Emergency Service after taking ethical clearance and proper consent explaining fully about the study and in case of intoxicated patients consent was taken from attendants. Inclusion and exclusion criteria was followed as: **Inclusion Criteria:**Patients with history of Trauma who visited at the Emergency Department of Peerless Hospital And Research Centre from March 2016 to August 30, 2017.**Exclusion criteria:**Those injured cases that need immediate transfers to other hospitals because of organizational problem and/or lack of bed during the day of the data collection and victims of injury with repeated attendance were excluded.

Objectives Of The Study:-

Socio demographic Characteristics of the Study Population with Incidence of the Road Traffic Injury and Factors Associated with Road Traffic Injury

Results:-

Tab.1:-Socio economic distribution of injured patients under study (n=103)

	No. (%)
Age (Years)	
15-20	33 (32.04%)
21-30	34 (33.01%)
31-40	12 (11.65%)
41-50	12 (11.65%)
>51	12 (11.65%)
Sex	
Male	74 (71.84%)
Female	29 (28.16%)
Marital Status	
Divorced	7 (6.80%)
Married	46 (44.66%)
Unmarried	50 (48.54%)
Education	
Illiterate	12 (11.65%)
Up to 8th	16 (15.53%)
10^{th}	17 (16.50%)
10+2th	33 (32.04%)
Graduate & above	25 (24.27%)
Monthly Income	
NIL	41 (39.81%)
Below Rs. 3,000/-	3 (2.91%)
Rs. 3,000 - 6,000/-	5 (4.85%)
Rs. 6,000 - 12,000/-	30 (29.13%)
Above Rs. 12,000/-	24 (23.30%)
Occupation	
Student	28 (27.18%)
No Job	15 (14.56%)
Pvt. Employee	28 (27.18%)
Govt. Employee	3 (2.91%)
Business	29 (28.16%)
Urban/Rural	
Urban	75 (72.82%)
Rural	28 (27.18%)

Tab.2:-Distribution of study victims over different behavioral factors

Behavioral factors	**Yes**	**No**	**P value**
Conflict with family members (n=103)	21 (20.39%) 95% CI (12.61%, 28.17%)	82 (79.61%) 95% CI (71.83%, 87.39%)	3.38e-09*
Psychological Problem (n=103)	28 (27.18%) 95% CI (18.59%, 35.78%)	75 (72.82%) 95% CI (64.22%, 81.41%)	5.83e-06*
Use of Alcohol (known cases) (n=87)	54 (62.07%) 95% CI (51.87%, 72.26%)	33 (37.93%) 95% CI (27.74%, 48.13%)	0.03201*
Financial Problem (known cases) (n=83)	28 (33.73%) 95% CI (23.56%, 43.91%)	55 (66.27%) 95% CI (56.09%, 76.44%)	0.0043*
Ambulance as mode of Transportation (n=103)	22 (21.36%) 95% CI (13.44%,	81 (78.64%) 95% CI (70.73%,	1.10e-08*

	29.27%)	86.56%)	

*P value < 0.05

Proportion of victim having conflict with family members (20.39%) is significantly lower than proportion not having any conflict with family members (79.61%) with P value 3.38e-09 (< 0.05).Proportion of victim with psychological problems (27.18%) is significantly lower than proportion without any psychological problems (72.82%) with P value 5.83e-06 (< 0.05).Proportion of victim uses alcohol (62.07%) is significantly higher than proportion not uses any alcohol (37.93%) with P value 0.03201 (< 0.05)Proportion of cases ambulance (21.36%) used as mode of transportation is significantly lower than the proportion other modes of transportation (78.64%) used with P value 1.098e-08 (< 0.05).

Tab.3:-Distribution of the study victims over Financial Status (n=103)

Financial status	**No. (%)**	**95% CI**
Poor	42 (40.78%)	(31.29%, 50.27%)
Middle	52 (50.49%)	(40.83%, 60.15%)
High	9 (8.74%)	(3.29%, 14.19%)

Proportion of victims from poor (40.78%), middle (50.49%) and high (8.74%) financial status differ significantly with P value 3.937e-07 (< 0.05). Proportion of victims from high financial status is significantly lower than the middle with P value 3.679e-08 (<0.05) and also lower than poor with P value 3.82e-06 (< 0.05). Proportion of victims from poor and middle financial status do not vary significantly with P value 0.3023 (>0.05)

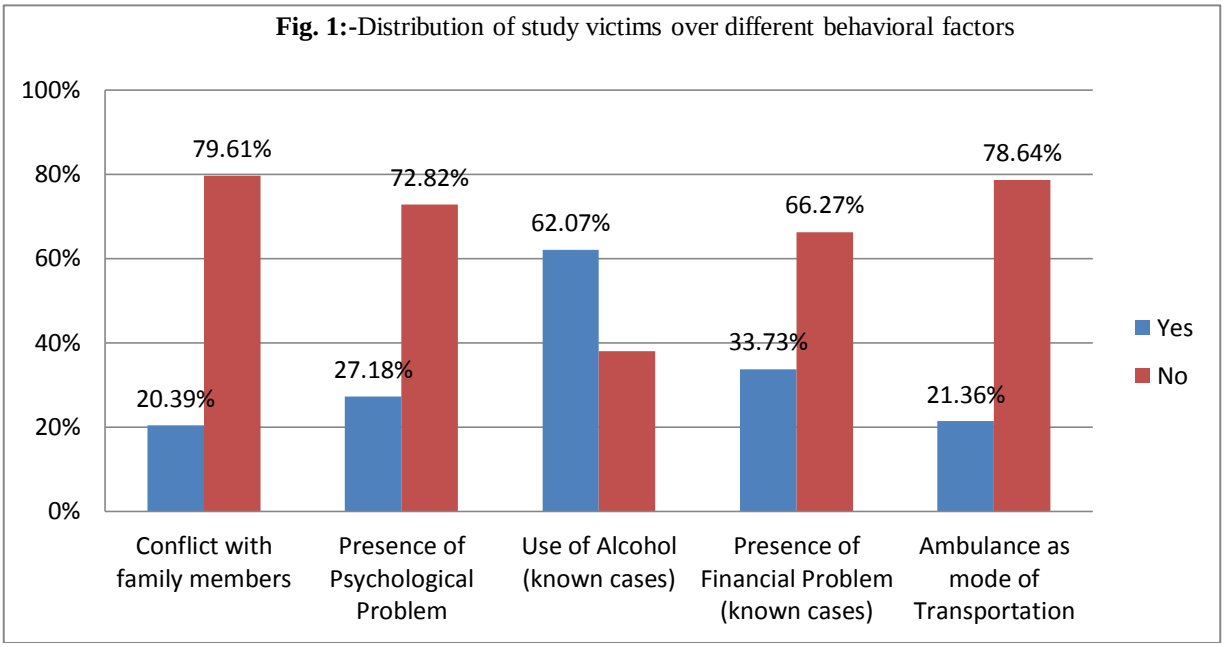
Tab.4:-Distribution of the study victims over use of Alcohol (n=103)

Use of Alcohol	**No. (%)**
Yes	54 (52.43%)
No	33 (32.04%)
Not Known	16 (15.53%)

Tab.5:-Distribution of the study victims over presence/absence of Financial Problem (n=103)

Financial Problem	**No. (%)**
Yes (Presence)	28 (27.18%)
No (Absence)	55 (53.40%)
Not Known	20 (19.42%)

Fig. 1:-Distribution of study victims over different behavioral factors



Tab 6:-Distribution of study victims over severity of Injury (n=103)

Severity of Injury	No. (%)
Mild	17 (16.50%)
Moderate	50 (48.54%)
Severe	36 (34.95%)

Tab.7:-Distribution of the study victims over mode of Transportations used (n=103)

Mode of transportation	No. (%)
Ambulance	22 (21.36%)
Pvt. Vehicle	72 (69.90%)
Rickshaw	9 (8.74%)

Tab 8:-Alcohol used by the victims with Mild, Moderate and Severe injuries

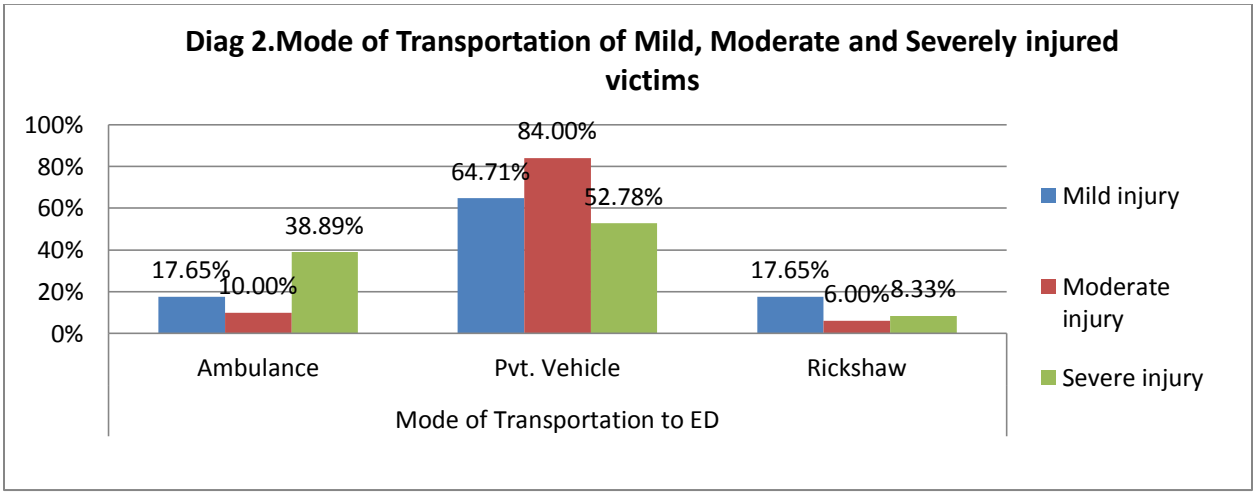
Severity of Injury	Use of Alcohol (Known cases)	
	Yes	No
Mild (n=17)	10 (58.82%)	7 (41.18%)
Moderate (n=42)	26 (61.90%)	16 (38.10%)
Severe (n=28)	18 (64.29%)	10 (35.71%)

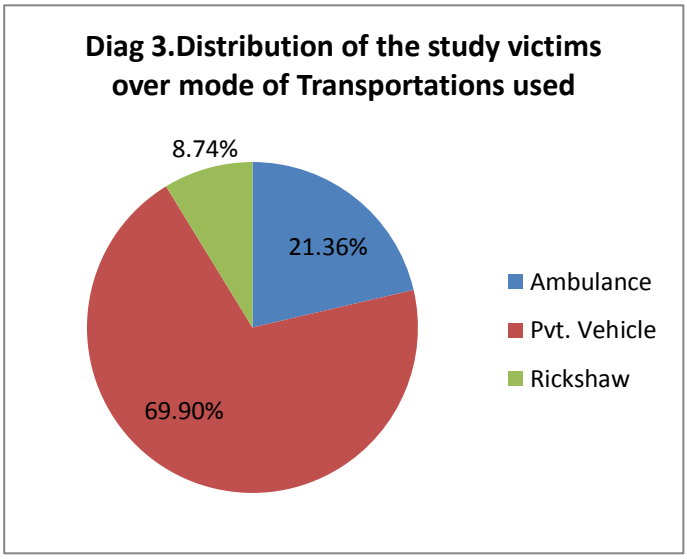
Alcohol used by the victims of Mild (58.82%), Moderate (61.90%) and Severe (64.29%) injuries do not vary significantly with P value 0.9347 (> 0.05)

Tab 9:-Mode of Transportation of the victims with Mild, Moderate and Severe injuries

Severity of Injury	Mode of Transportation to ED		
	Ambulance	Pvt. Vehicle	Rickshaw
Mild (n=17)	3 (17.65%)	11 (64.71%)	3 (17.65%)
Moderate (n=50)	5 (10.00%)	42 (84.00%)	3 (6.00%)
Severe (n=36)	14 (38.89%)	19 (52.78%)	3 (8.33%)

Proportion of victim shifted to Healthcare centers by ambulance (21.36%, 95% CI 13.44% - 29.27%) is significantly lower than proportion shifted using other modes of transportation (78.64%, 95% CI 70.73% - 86.56%) with P value 1.098e-08 (< 0.05); Ambulance service as mode of transportation to Healthcare center of Mild (17.65% 95% CI 0.00% - 35.77%), Moderate (10.00%, 95% CI 0.00% - 24.26%) and severely (38.89%, 95% CI 15.72% - 62.06%) injured victims varies significantly with P value 0.005076 (>0.05). test statistic used chi-square test for proportions.





Tab 10:-Presence/Absence of Financial problem of the victims with Mild, Moderate and Severe injuries

Severity of Injury	**Financial Problem (Known cases)**	
	Yes	No
Mild (n=13)	5 (38.46%)	8 (61.54%)
Moderate (n=42)	12 (28.57%)	30 (71.43%)
Severe (n=28)	11 (39.29%)	17 (60.71%)

Presence of financial problems among Mild (38.46%) Moderate (28.57%) and severely (39.29%) injured victims do not vary significantly with P value 0.6015 (>0.05).

Tab 11;-Conflict with family members of the victims with Mild, Moderate and Severe injuries

Severity of Injury	**Conflict with family members**	
	Yes	No
Mild (n=17)	3 (17.65%)	14 (82.35%)
Moderate (n=50)	8 (16.00%)	42 (84.00%)
Severe (n=36)	10 (27.78%)	26 (72.22%)

Conflict with family members among Mild (17.65%) Moderate (16.00%) and severely (27.78%) injured victims do not vary significantly with P value 0.3900 (>0.05).

Tab 12:-Psychological Problem of the victims with Mild, Moderate and Severe injuries

Severity of Injury	**Psychological Problem**	
	Yes	No
Mild (n=17)	7 (41.18%)	10 (58.82%)
Moderate (n=50)	9 (18.00%)	41 (82.00%)
Severe (n=36)	12 (33.33%)	24 (66.67%)

Presence of psychological problems among Mild (41.18%), Moderate (18.00%) and severely (33.33%) injured do not vary significantly with P value 0.1054 (> 0.05)

Test statistic used chi-square tests (chi-squared contingency table test and goodness-of-fit test) and Pearson's chi-squared tests for equality of proportions of several groups or given proportions. Statistical package used R version 3.4.1 (statistical functions used chisq.test, prop.test and pair wise.prop.test)P value less than 0.05 is considered as significant.

Background Literature:-

1. Incidence of Road Traffic Injury and Associated Factors among Patients Visiting the Emergency Department of TikurAnbessaSpecialized Teaching Hospital, Addis Ababa, Ethiopia by BewketTadesseTiruneh, BerihunAssefaDachew, and BerhanuBoruBifft in 2014.
2. A study to assess the factors associated with severity of road traffic injuries in the emergency medicine department in rural India by JeedhuRadha at Pesimr Hospital, Kuppam, Andhra Pradesh, India in 2015

Discussion:-

The study which has been done was to show the different factors associated with road traffic injury. This study was done in this hospital, as there was no such previous studies in this metropolitan city, Kolkata. The study was done in the Emergency department setup of a tertiary care center of this city .As the department is equipped to deal with all type of trauma cases, as, this hospital is a referral center also, so many of the road traffic accident cases were referred to this hospital and some came directly. As per the study method, only those patients were selected who fulfils the inclusion criteria as given in the above pages. The study was a prospective study and no information of the patients were disclosed outside.

Conclusion:-

Results clearly shows that a large number of people who came with RTA have alcohol influence but not related with severity of injury and the health care need to be improved in regard to transport facilities as it is clearly demonstrated that very less people use ambulance service for mode of transport.

Limitations:-

Can be done in others centers in Kolkata and then to analyze the data so that it can help the government to make some policies regarding road traffic accidents.

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