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Original Article

AN ANALYSIS OF ROAD TRAFFIC COLLISIONS ON ROADS OF SABARKANTHA DISTRICT OF GUJARAT

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ABSTRACT

This study on road traffic accidents in Sabarkantha district conducted from January to December 2002 among National and State Highways and town/ village roads examines the pertinent epidemiological variables thereof. Of the 512 event of road traffic accidents 81.6% were non-fatal and 18.4% were fatal with domination of pedestrian accidents (37.8%). The highest events (40%) took place on National highway followed by State highways (31.4%) and town/village roads (28.5%) and events like "vehicle head on", "vehicle hit from back", "vehicle hit from side" and "run off the road" were higher on National highway. The study point to the need for proper traffic management at all levels starting from the village and town roads to the State and National highways to control the avoidable morbidity and mortality associated with road traffic accidents.

Key words: Road traffic accidents, non-fatal and fatal events.

INTRODUCTION

Accidents today are among the leading causes of death. Thus, while medical science has conquered the ravages of many communicable and non-communicable diseases, accidents are now emerging as a new "epidemic" of increasing public health importance calling for concerted efforts to prevent and control this problem. It was precisely due to these reasons that the World Health Organization recognized this problem and made it as a theme for the WHO day 2004-2005, namely "Road Safety". Motor vehicle accidents claim the largest toll of life and tend to be of a more serious nature.

Rapid urbanization, modernization and industrialization have all exacerbated and accentuated the pre-existing problem of traffic congestion and road traffic accidents. Motorization refers to the influx of motor vehicles, including high performance cars, trucks, and motorcycles, without concomitant changes in roads, pedestrian patterns and traffic enforcement capabilities. Although bicycle continues to be world's leading vehicle for transportation, the global increase in automobiles has been truly staggering.[1-2] The road network in India is divided in to two categories (urban & non-urban) with the non-urban roads being further divided in to three main classes-national highway, state highway and village roads. In India the traffic on highways or on urban road is heterogeneous and includes fast moving vehicles like trucks, buses, cars, scooters and slow moving vehicles like bicycles, bullock-carts, camel-carts and also cattle and pedestrians. Not only that, but also the growth of number of vehicles playing on roads has outpaced the growth of roads which has increased the traffic problems resulting in congestion, delays and accidents.[3] There is no panacea to prevent all road traffic accidents and organized teamwork by people in many disciplines such as educators, engineers, medical practitioners, psychologists and enforcement officers, is necessary for effective prevention.[4]

MATERIALS AND METHODS

The present study of epidemiological variables of road traffic accidents was carried out in Sabarkantha district. According to the 2001 census the population of Sabarkantha is 20,38,416, which comprises of 4.12% of total population of Gujarat state. National highway No.8, namely Delhi & Mumbai highway passes across this district and state highways connect the district with the historical places of Ambaji and Shamlaji. Consequently the roads of Sabarkantha district bear heavy passengers and goods load. The study area included the national highway, two state highways and town/ village roads. The study was spread over a one year period from January 2002 to December 2002 and during this period a total of 512 road traffic accidents were recorded. A pre designed and pre-tested Performa was used and details about road traffic accidents were collected from FIR, case record file and interviews of the investigating police officers of concerned police stations.

RESULTS

Table 1 shows that out of total 512 events, 81.64% of events were non-fatal and 18.36% were fatal. Analysis also shows that highest number of events (40.04%) took place on National Highway followed by State Highways (31.83%) and town/village roads (28.13%).

If analyze a non-fatal and fatal accidents separately for each road category, than highest number of fatal accidents took place on National Highway(73.65% non-fatal and 26.34% fatal) followed by State Highway (84.05% non-fatal and 15.95% fatal) and town/village roads (90.28% non-fatal and 9.72% fatal). Table shows that the difference between non-

fatal and fatal events that took place on different roads is significant.

Table 1: Fatal and Non fatal events of road traffic accidents according to Road category

Road Category	Events of Road Traffic Accidents		
	Non Fatal	Fatal	Total
	No. (%)	No. (%)	No. (%)
Village/ Town Roads	130 (90.28%)	14 (9.72%)	144 (100%)
State Highway	137 (84.05%)	26 (15.95%)	163 (100%)
National Highway	151 (73.66%)	54 (26.34%)	205 (100%)
Total	418 (81.64%)	94 (18.36%)	512 (100%)

(X^2=16.42; df=2;P<0.05)

Table 2 shows that out of 512 events of road accidents, highest number of events (40.04%) took place on National Highway followed by State Highways (31.45%) and town/village roads (28.52%). Comparing the accidents between town/village roads, State and National highways, than it is seen that there was not much more difference in Hit pedestrian event, whereas some other events (Vehicle head on, Vehicle hit from back, Vehicle hit from side and Run off the road) were high on National highway than other road category. It is also seen statistically that there was no significant difference in the types of accidents on different road category except "vehicle hit from back" type of collision in which the rate was significantly higher on highways.

Table 2 Distribution of types road traffic accidents on different Road category

Types of Accident	Events of Road Traffic Accidents							
	Town/Village Roads		Highways				Total	
			State		National			
	No.(%)*	%	No.(%)*	%	No.(%)*	%	No.	%
Hit pedestrian	68(35.23)	46.58	65(33.68)	40.37	60(31.09)	29.27	193	37.70
Vehicle head on	40(29.85)	27.40	29(21.64)	18.01	65(48.51)	31.71	134	26.17
Vehicle hit from back**	9(13.24)	6.16	25(36.76)	15.53	34(50)	16.59	68	13.28
Vehicle hit from side	6(16.22)	4.11	14(37.84)	8.70	17(45.93)	8.29	37	7.23
Over Turn	17(35.42)	11.64	17(35.42)	10.56	14(29.17)	6.83	48	9.38
Vehicle hit fixed object	3(33.33)	2.05	3(33.33)	1.86	3(33.33)	1.46	9	1.76
Run off the road	0(0)	0	8(40)	4.97	12(60)	5.85	20	3.91
Other	3(100)	2.05	0(0)	0	0(0)	0	3	0.59
Total	146(28.52)	100	161(31.45)	100	205(40.04)	100	512	100

**SEP=2.76, Z=3.60, p<0.05, between village roads and highways *(row percentages)

DISCUSSION

Of the 512 events of road traffic accidents, 81.6% were non-fatal and 18.4% were fatal. The maximum number of events took place on the national highway (40.04%) followed by state highways (31.45%) and lastly, the town /village roads (28.52%). Result also suggests that pedestrian accidents dominated the town/ village roads and state highway. Analysis revealed that two vehicle-involved events (vehicle head on, vehicle hit from back, vehicle hit from side) were more on national highway as compared to other road categories. This difference could be due to greater high speed and long distance vehicles passing through the national highway, as revealed from discussions, however this was not specifically measured in the study. The relatively lower number of events on the village roads suggests that the overall speed of vehicles is slower on these roads, a fact also brought out in our discussions.

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