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AWARENESS OF DRIVING SAFETY MEASURES IN GENERAL POPULATION VISITING TERTIARY CARE HOSPITAL

Forensic Medicine

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ABSTRACT

BACKGROUND: Road traffic accident is a preventable global disaster. In developing countries, the existing road safety policies are ineffective in preventing casualties, mainly because of lack of knowledge regarding the same in the general population. The early assessment of awareness of driving safety measures in general population will thus go a long way to help in reducing existing high fatalities.

MATERIAL AND METHODS: A close ended questionnaire based, cross-sectional study was conducted among 200 participants of age 16 years and above with a valid driving license to assess the awareness regarding driving safety measures. The data was collected and analyzed for number, percentage, mean, standard deviation, t test and Chi-square test.

RESULTS: 80.8% of the urban population and 60.5% of the rural population were aware of the legal age for driving vehicles. Majority of the participants were aware regarding wearing helmets while driving. Use of seatbelt and prohibition of alcohol intake while driving was comparatively less in rural population. Awareness of prohibition of use of mobile phone while driving and sign of speed limit was observed in 2/3rd of the population. Less than half of the rural population was unaware of the basic traffic signs like stop, no parking, no horn, school ahead, and one way.

CONCLUSION: Awareness regarding driving safety measures in general population was comparatively less among rural population than urban. Traffic awareness campaigns in hospitals in association with Regional Transport Office would be one of the beneficial measures to minimize fatalities arising due to lack of knowledge of safe driving measures.

KEYWORDS

Awareness, Driving safety measures, General population, Questionnaire based.

INTRODUCTION:

As human beings have evolved their capacity has increased. However, during the process of evolution there has been an introduction of new elements like traffic accident which have contributed significantly to mortality. With a surge in motorization both due to increasing population and vehicular penetration, fatalities and injuries is becoming a matter of concern. According to official statistics about 141,526 persons were killed and 477,731 were injured in road traffic crashes in India in 2014[1]. However, this is probably an underestimate, as not all injuries are reported to the police[2,3].

More than one-half of all road traffic deaths globally occur among people ages 15 to 44 years, the most productive earning age group. Moreover, the disability burden for this age group accounts for 60 percent because of road traffic accidents[4]. The World Bank estimates that road traffic injuries cost 1 % to 2 % of the gross national product (GNP) of developing countries, or twice the total amount of development aid received worldwide by developing countries[5].

As in developed countries, driver impairment is an important component of road traffic accidents in developing countries. Driving at excess speeds, while under the influence of alcohol or drugs, while sleepy or tired, when visibility is compromised, or without protective gear for all vehicle occupants are major factors in crashes, deaths, and serious injuries. In general, pedestrians, cyclists, and moped and motorcycle riders are the most vulnerable road users as well as the heaviest users of roads in poor countries. India contributes one-sixth of the world's population[6] and has witnessed a 10-fold increase in the number of fatalities from 1970 to 2009[7] with one accident occurring every minute and one fatality every four minutes[8]. Overpopulation, increased number of vehicles on road, poor road conditions are some of the major causes of increased injuries and fatalities in India[9, 10]. Other major cause being disregard for traffic rules and regulations and human errors, accounting for over 80% of all fatal injuries.

According to provisional data by the census India, the population of India is approximately 68.84% and 31.16% in rural and urban setup and the MoRTH report states that 56,663 (40.6%) fatalities took place in urban areas and 83,008 (59.4%) in rural areas and it is possible that a larger number of cases go unreported on rural roads. These data suggest that the urban fatality share is slightly higher than the estimated rural population share (32%) in 2014[11]. Education and training of the population can be one of the main approaches to prevent accident. This can be done after awareness of the population regarding the driving safety measures has been assessed. With this in mind, the present study was planned to assess and compare the awareness about driving safety measures in urban and rural population.

MATERIAL AND METHODS:

A cross-sectional questionnaire based study was carried out in 200 adults (100 from urban area and 100 from rural area), visiting Tertiary Care Hospital, Nagpur during the period of July 2016 to December 2016. Simple random sampling method was used to select participants. Ethical clearance was obtained from the Institutional Ethics Committee prior to the study (Approval No. IEC/NKPSIMS/4 2016 dated 26/05/2016). Informed consent was obtained prior to study.

Persons who were 16 years old or above with valid driving license and who consented for the study voluntarily were included in the study. Those who were not willing to participate were excluded from the study. Data was collected using a structured, validated, close ended questionnaire. The data was entered in the excel sheet and analyzed by using Epi-Info 7 statistical software for number, percentage, mean, standard deviation, t test and Chi-square test. Pearson Chi-square test was used to find out statistical significance of differences in proportions. A p-value of <0.05 was considered to be significant.

RESULTS:

The present study was carried out in 200 participants (100 from urban population and 100 from rural population). Out of 100 participants from urban population, 76 were males and 24 were females and out of 100 participants from rural population, 81 were males and 19 were females. Minimum age was 16 years and maximum was 57 years (Mean = 36.836, SD = ± 9.662). The highest percentage of participants was from an age group of 26-35 years from urban population and 36-45 years from rural population as depicted in Table 1.

Table 1: Demographic information of participants

Trait		Urban	Rural	Total
Age group	**16-25 years**	08	14	22
	26-35 years	57	16	73
	36-45 years	23	52	75
	> 45 years	12	18	30
Gender	**Male**	76	81	100
	Female	24	19	100

Out of 200 participants, 89 urban and 76 rural participants were driving a vehicle and were considered for the study; total experience of driving is depicted in Fig. 1.

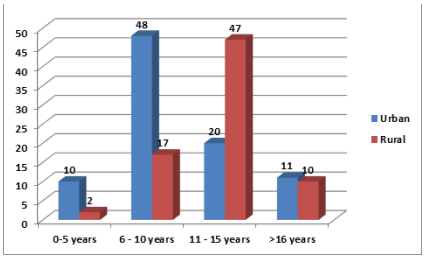


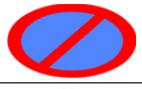
Figure 1: Total driving experience in participants

Out of 89 urban participants, 59 were driving two-wheeler, 8 were driving three- wheeler, 12 were driving four-wheeler and 10 were driving both two-wheeler as well as four- wheeled vehicles. Out of 76 rural participants, 68 were driving two-wheeler, 01 was driving three-wheeler, 04 were driving four-wheeler and 03 were driving both two-wheeler as well as four- wheeled vehicles. In the current study, we assessed and compared the awareness about driving safety measures in urban and rural population who were driving the vehicles and results are depicted in Table 2 and Table 3. Overall, we observed that the awareness regarding driving safety measures among the rural population was comparatively less than urban population.

Table 2: Awareness about driving safety measures in general population

Trait		Urban n = 89		Rural n= 76		Chi-square test	p value
Age for permanent driving license with or without gear		72(80.8%)		46 (60.5%)		3.83494	0.050195
Side of road to be used while walking on road		Right side	63(70.7%)	Right side	29(38.1%)	0.351663	0.553173
		Left side	26(29.2%)	Left side	47(61.8%)		
Side of vehicle to overtake		Right side	67(75.3%)	Right side	43(56.5%)	1.55905	0.211804
		Left side	22(24.7%)	Left side	33(43.4%)		
Need for renewal of registration of vehicle after 15 years		63 (70.7%)		28 (36.8%)		0.280788	0.596185
Prohibition of mobile use while driving		72 (80.8%)		66 (86.8%)		1.81172	0.178302
Prohibition of alcohol intake while driving		85 (95.5%)		63 (82.8%)		27.994	0.007332
Use of zebra crossing for pedestrians		78(87.6%)		39(51.3%)		13.9599	0.000187
Wearing helmet		69 (77.5%)		53 (69.7%)		0.742482	0.388867
Wearing seatbelt		64 (71.9%)		38 (50%)		0.918215	0.337944
Interpretation of traffic signals	Red	89(100%)		76(100%)		13.9599	0.000187
	Green	89(100%)		76(100%)		5.42451	0.019856
	Yellow	63 (70.7%)		28 (36.8%)		0.280788	0.596185
Regular maintenance of vehicle		30 (33.7%)		21 (27.6%)		0.247379	0.618926

Table 3: Interpretation of Traffic Signs

Trait	Symbol	Urban n=89	Rural n=76	Chi-square test	P value
Stop		82(92.1%)	67(88.1%)	2.69319	0.100778
One way		70(78.6%)	32(42.1%)	2.80796	0.093798
School ahead		71(79.8%)	42(55.2%)	3.6788	0.055108
No horn		35(39.3%)	24(31.5%)	0.197515	0.656735
No Parking		83(93.2%)	48(63.2%)	33.3077	0.0000008
Speed Limit		71(79.8%)	48(63.2%)	2.70893	0.099788

DISCUSSION:

Though road traffic accidents cannot be prevented completely, some of the injuries and deaths can either be minimized or prevented by creating awareness among population. Since awareness translates into practice, the first step was to assess the awareness. Keeping this in mind, this study was conducted to assess the existing situation regarding awareness about driving safety measures across the urban and rural population since data regarding the same is very scarce in this population. All those who were above 16 years having valid driving license were included in the study because prior studies[12, 13] have demonstrated that risk of accidents is more in people driving without valid driving license.

Majority of the respondents were of age 26-35 years in urban population and 36-45 years in rural population. Since data regarding the awareness in the subgroups of Indian population is limited, it is difficult to compare our findings with others. We observed that the awareness regarding driving safety measures among the rural population was comparatively less than urban population. This may be one of the contributing factors for increased fatalities being reported from rural population[11]. Majority of the population were driving two-wheelers which is similar to study by Karthikeyan K[14], the reason may be the inclusion of young college students in his study.

In India, the eligibility for obtaining a learner's license for a private motor vehicle of 50cc engine capacity and without any gear is 16 years (if the applicant's parents or guardians give their consent) and the minimum age to apply for a permanent license to drive a private motor vehicle is 18 years. The present study revealed that 80.8% of the urban population and 60.5% of the rural population were aware of the legal age for driving vehicles. In a study by Sherin Paul et al[15], carried out in a rural block of North Tamilnadu, nearly one fourth of the participants did not know correctly the legal age for driving. Studies have shown that use of traffic lights considerably improve the road safety and decrease accidents[16, 17, 18]. Except for interpretation of yellow signal, most of the participants of present study were well-versed with other traffic lights, however in a study carried out in youths by Gharaibeh ES[19] and Phanindra D et al[20], the awareness regarding interpretation of traffic lights was not satisfactory. We observed that very few participants were aware about use of dim and dip signal in night.

Our study revealed that majority of the participants were aware regarding wearing helmets while driving, probably due to strict enforcement of traffic laws and regulations in Central India. Only half of the rural population was aware about seatbelt use as compared to 3/4th of urban population, probably due to more usage of four-wheelers in urban population. As per 184 Motor Vehicle Act of India, using mobile phone while driving is punishable which was known by a good number of the participants in our study. The speed limit is an important aspect which needs to be known because driving at a restricted speed gives just one benefit that the driver can keep the vehicle under control in case of an emergency. The awareness of sign of speed limit was observed in 2/3rd of the population in the present study. 10-15% of the general population was not aware about the speed limits to be followed while driving which can be attributed to the fact that speed-limit enforcement in India is almost non-existent, although recently highway police have begun to use automated instruments which capture the speed and mail the fine to the vehicle's owner.

Several studies have indicated that alcohol consumption before driving is unsafe and is directly responsible for fatal accidents. The awareness of prohibition of alcohol intake while driving was comparatively less in rural population[12, 14, 21, 22.] Regular maintenance of the vehicle is one of the key factors in preventing accidents. However in the present study, about quarter of the respondents were aware that vehicles should be serviced regularly. In a study by Karthikeyan Kulothungan[14], about quarter of participants serviced their vehicles regularly. Though regular maintenance of vehicles is practice, awareness regarding the same should be given equal importance. As per the Central Motor Vehicle Rules, India, all private vehicles are to re-register after 15 years for every 5 years, for as long as it is considered road worthy by the department. Our study demonstrates an important finding that 70.7% urban and 36.8% rural population were aware about the need of renewal of registration certificate.

Traffic signs are said to be good indicators even to layman, however our study demonstrated that less than half of the rural population was not aware of the basic traffic signs like stop, no parking, no horn, school ahead, and one way. As far our knowledge we could not search any literature regarding this issue in relation to urban and rural population in developing countries.

CONCLUSION:

Strict enforcement of laws and as an initial step periodic organization of traffic awareness campaigns for the general population can result in decreasing the burden of road traffic accidents. As a responsible citizen who cares about one's safety and that of others on the road, it is important to be aware about driving safety measures. Driving safety educated population are the leaders of communities forming opinions and hence educational interventions in improving their awareness is the need of the hour in developing countries of ours.

LIMITATION OF THE STUDY:

Though the study was conducted at a major tertiary health care centre of central India, the observations might not represent a true picture of the country as the data was limited to this region only. Moreover mere awareness does not reflect the actual picture of practice related to driving rules. A combination of both is of utmost importance to decrease the percentage of road traffic fatalities.

Conflicts of interest: None.

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