# ORIGINAL ARTICLE

## ROAD SAFETY; HOW WELL-INFORMED ARE OUR RURAL POPULATION?

Sherin Paul[1], Sam Marconi David[2], Mehul Chourasia[3], Fibi Ninan[4], Sharon Rymbai[5]

**HOW TO CITE THIS ARTICLE:**
Sherin Paul, Sam Marconi David, Mehul Chourasia, Fibi Ninan, Sharon Rymbai. "Road Safety; How Well-Informed Are Our Rural Population?". Journal of Evidence based Medicine and Healthcare; Volume 1, Issue 11, November 17, 2014; Page: 1404-1411.

**ABSTRACT:** A community based cross sectional study was carried out in a rural block of north Tamilnadu to assess the knowledge; attitude and practice of general population of age group 18 to 35 regarding road safety rules. A semi structured interviewed administered questionnaire was administered among a 115 participants. 82.1% drove vehicle without a license. 75.7% did not know the side of the road to be used by pedestrians for walking. Only 15.7% could recognize all 5 traffic signals properly. Nearly 95.7% agree that helmets prevent accident, but only 37.5% use helmet/seat belt regularly. To prevent casualties due to road traffic accidents (RTA) mass public awareness campaigns should be initiated so that both the driver and the pedestrian will be aware of all the traffic rules properly. The ignorance of one can become fatal for the other.
**KEYWORDS:** Road Traffic Accidents, Awareness, Attitude, Rural population.

**INTRODUCTION:** Road traffic accident (RTA) is a global disaster hampering the life of million.[(1)] India accounts for a RTA rate of 6%.[(2)] RTA fatality which is defined as any person dying immediately or within 30 days after a fatal accident[(3)] is 25.3 per 10,000 vehicles.[(2)] Nearly 10% to 30% of the hospital registrations in India are due to RTA and it is the 6$^{th}$ leading cause of death in India.[(4)] Majority of the victims are from rural background belonging to the age group 15 to 44 years.[(4–6)] RTA primarily affects the poorer sections of the society.[(4)] The percentage of men affected by RTA are very high.[(7)]

It is difficult to assess the economic loss due to RTA as the indirect costs of such events are difficult to measure.[(8)] It is shown that economic burden of the RTA are disproportionately borne by countries which are least equipped to handle it. Various studies which have looked into the knowledge of the public regarding traffic rules show poor knowledge and awareness regarding the same.[(9,10)] Study done among school children regarding road safety practices have shown knowledge regarding various rules ranging from 30% to 60%.[(11,12)] Very few studies have looked into the knowledge levels of rural public regarding road safety rules. The current study aims to assess the knowledge, attitude and practice among the rural population regarding the road safety rules.

**METHODOLOGY:** During the period from November 2013 to December 2013, a community based cross sectional study had been carried out in one of the blocks of Vellore District, Tamilnadu. Multistage sampling method was used to identify the study participants. 6 villages were selected using cluster sampling method. Within each village 20 participants were selected using systematic random sampling.

Based on assumption of awareness regarding road safety as 50%, taking a relative precision of 20% and design effect of 1.2 a sample size of 120 was calculated. Consent form was prepared, translated and back translated in both English and Tamil. All those who were in the age group 18 to 35 were included in the study, irrespective of whether they had driving license or not. Those who were mentally challenged and visually impaired were excluded from the study. Data was collected using semi structured interviewer administered questionnaire. Data was entered using epi info version 3 and analyzed SPSS 20.

**RESULTS:**

**Socio demographic characteristics of the study population:** Data was collected from115 study participants. Due to time constraints only 15 participants were interviewed in the last village.

| Variable | Categories | Number (%) n=115 |
|---|---|---|
| Age | Less than 25 | 57 (50%) |
| | More than = 25 | 58 (50%) |
| Sex | Male | 76 (66.1%) |
| | Female | 39 (33.9%) |
| Education status | High school and below | 52 (45.2%) |
| | Higher secondary and above | 63 (54.8%) |
| % who can drive | Can drive | 95(82.6%) |
| | Cannot drive | 20 (17.4%) |
| % of drivers having licence | Have licence | 78 (82.1%) |
| | Do not have licence | 17 (17.9%) |
| % attended driving schools | Attended driving schools | 41(51.3%) |
| | Didn't attend driving schools | 39 (48.7%) |

Table 1: Socio demographic characteristics

Among those who drive 73.6% (70) were men and 26.4% (25) were women. All the women were driving only 2 wheelers which included bicycles and motorcycles. Majority of the men (71.4%) were using motorcycles. The rest of the vehicles included bicycles, 3wheelers like auto rickshaw and 4 wheelers. Among those who were using motorcycles 2 were driving without license. 26 study participants have met with accident at least once in their life time of whom 7 (26.9%) were pedestrians, 15 (57.7%) were drivers and 4 (15.4%) were pillion riders.

**KNOWLEDGE:** Nearly one fourth of the participants did not know the legal age of driving. 2 answered it as less than 18 and 11 replied as more than 18. Interestingly, 17 participants answered didn't know about the legal age of driving. Similarly 8 participants were unsure about whether license needed to be taken for driving. The participants were asked to interpret the following signs.


**Figure 1: Traffic signals**

Only 15% correctly interpreted all the five signs. Nearly 21% did not identify any of the five signs. In the following table it is explained the number of participants who have correctly interpreted the signs given in figure 1.

| No of signals | No of participants (%) |
|---|---|
| 0 | 24 (20.8%) |
| 1 | 19 (16.5%) |
| 2 | 17 (14.8%) |
| 3 | 24 (20.9%) |
| 4 | 13 (11.3%) |
| 5 | 18 (15.7%) |

Table 2: Participants interpreted the signs

Among 44 participants who did not explain the meaning of all three traffic signals, 20 (17.4%) could not identify any of the three traffic signals correctly. The rest 24 (20.9%) identified at least one or two of the traffic signals. Nearly 69% of the participants answered that the left side of the road should be used by pedestrians for walking where as 3% thought any side could be used. 4% replied 'do not know' for that question. 59% of the participants thought that vehicle in front should be overtaken by its left side and 10% did not know which side to be used. When asked about how many can travel in a two wheeler 11 participants responded by saying 3 and 20 participants did not know the answer for that question. Only 6 participants knew about the speed limits that had to be followed in school zones, village roads, townships and highways.

| Questions | Correct answer | Wrong answer |
|---|---|---|
| Legal age of driving | 85(73.9%) | 30(26.1%) |
| Needs licence for driving | 101(87.8%) | 14(12.2%) |
| Correctly identifying traffic light | 71(61.7%) | 44(38.3%) |
| Side of the road to be used by pedestrians | 28(24.3%) | 87(75.7%) |
| Side of the road to be used to overtake the vehicle in front | 33(28.7%) | 82 (71.3%) |
| How many can ride in two wheeler | 84(73%) | 31(27%) |

Table 3: Knowledge of the participants regarding traffic rules

**ATTITUDE:** Different questions were asked to identify the attitude of the participants towards usage of helmets while travelling in a two wheeler, use of mobile phones while driving, use of headlights in a bike and usage of roads for celebrating various local socio cultural activities. The response of the participants was summarized in table 4.

| Attitude statement | | Agree% (n) | Disagree% (n) | Not sure% (n) |
|---|---|---|---|---|
| Regarding helmet | Avoids accidents | 95.7% (110) | 0.9% (1) | 3.5% (4) |
| | Uncomfortable | 37.5% (41) | 53.9% (62) | 10.4% (12) |
| | Expensive | 30.4% (35) | 47% (54) | 22.6% (26) |
| | Decreases field of vision | 20.9% (24) | 64.3% (74) | 14.8% (17) |
| | Uncommon practice in Vellore | 53.9% (62) | 27% (31) | 19.1% (22) |
| Regarding behavior | Using cell phone while driving is alright | 15.7% (18) | 80.9% (93) | 3.5% (4) |
| | Drinking and slow driving is ok | 41.7% (48) | 55.7% (64) | 2.6% (3) |
| Regarding cycle | No need for light | 27.8% (32) | 66.1% (76) | 6.1% (7) |
| | Light is expensive | 30.4% (35) | 57.4% (66) | 12.2% (14) |
| Regarding social practice | Weekly market in roadside increases accidents | 73.9% (85) | 18.3% (21) | 7.8% (9) |
| | Kalyana Mandapam in road side increases accidents | 70.4% (81) | 20% (23) | 9.6% (11) |
| | Can burst crackers in rural roads | 27% (31) | 67.8% (78) | 5.2% (6) |
| | Can cross closed railway gates | 12.2% (14) | 84.3% (97) | 3.5% (4) |
| | Drying groundnuts in roadside increases accidents | 73% (84) | 19.1% (22) | 7.8% (9) |

Table 4: Attitude of the participants regarding different traffic rules

**PRACTICE:** We asked about the age at which they had started driving. We found that 3 people had started using big bicycles at a very young age of 6 years. The maximum age of initiation of driving was 29. The mean of driving among the study participants were 16. When we asked whether they always walk over the right side of the road only 14% replied as yes. Nearly 84% preferred left side for walking. About 2% used both sides for walking. The response for the rest of practice questions are summarized in table 5.

| Questions | Always (%) | Sometimes (%) | Never (%) |
|---|---|---|---|
| Do you wear helmet/ seat belt? | 30(37.5)% | 37(46.3%) | 13(16.2%) |
| Do you blow horn before you overtake? | 58(72.5%) | 21(26.2%) | 1(1.3%) |
| Do you use indicator before turning? | 72(90%) | 8(10%) | - |
| Do you look both sides before crossing? | 78(97.5%) | 2(2.5%) | - |

Table 5: Few traffic rules practiced by the participants

**DISCUSSION:** The study was carried out in a rural block of North Tamilnadu. A total of 115 participants of the age group 18 to 35 years were interviewed using a semi structured interviewer administered questionnaire to assess their knowledge, attitude and practice regarding road safety measures. Majority of the interviewed population were men (66.1%). 82.6% of the participants could drive either a two wheeler like a bicycle or a motor cycle or a three wheeler or a four wheeler.

This is primarily because majority of the participants were males. Motor cycle, which also included moped, was the most preferred vehicle. Of the 80 participants only 41 had taken formal training by attending a driving school. But this is not an indication that they are well trained in driving. There are reports that some of the driving schools are running without a license and the facilities provided by them are below expectations.[13] The Motor Vehicle Act (MVA) 1988, Central Motor Vehicle Rules, 1989 and State Motor Vehicle Rules are the legal instruments for the conduct of road traffic in India. According to these act driving without license invites a miniscule penalty of Rs 100 for first time offence, Rs 300 for subsequence offence and Rs 1000 fine and 3 month imprisonment for allowing vehicle to be driven by a person who do not possess a valid license.[14]

This punishment is not only trivial but also not implemented properly in India. In our study population among those who need license only 82.1% possess license. Rest did not have any valid license. Surprisingly 12.2% did not know that license was needed for driving. In India the legal age for driving is 18. The age for driving vehicles with engine capacity of 55cc or less is 16.[15] 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.[16–18] In our study only 61.7% could correctly identify all three traffic lights. 38.3% could not recognize either 1 or 2 of the traffic lights.

This inability to correctly identify the traffic lights need to be addressed immediately as RTA emerge as a leading cause of death and disability in India.[19] Pedestrians are one of the one commonest group who get affected by RTA.[7] It is shown that pedestrians contribute to 45% of road traffic fatalities in low income, 29% in middle income and 18% in high income countries.[20] In our study three fourth of our participants believed that pedestrians should walk over the left side of the road. This can be a major contributor towards high rate of RTA among pedestrians. Two wheeler drivers and pillion riders are the second major category affected by RTA.[21] Two wheelers are meant for travelling by two people. But unfortunately in India this rule has been flouted by both passengers and traffic police. It is a common seen in rural India where three or four people travel in a two wheeler.[22] Of the 115 study participants 31 (26.9%) did not know the fact that the two wheelers are meant for 2 people.

We asked certain questions regarding usage of helmet, drinking and driving, use of mobile phones while driving, use of headlights for bicycles and certain social practices to understand their attitude towards the attitude of the population towards road safety practices. It is reported that only 22% use helmets for two wheelers in India. The reported reasons are not having one, depending on where they have and forgetting it sometimes.[23] In this study participants agreed that use of helmets decrease accidents, but they also observed that, irrespective being inexpensive and comfortable, the use of helmet was very uncommon in Vellore.

Use of cell phone while driving is a matter of concern for both motorist and policy makers as it poses risk to both drivers and others.[24] Majority of the participants agree that it was not right to use cell phones while driving. There are no legislation regarding non- motorized traffic on the roads in India.[25] Majority of them use bicycle without a headlight or a rear light. When asked about headlights for bicycle participants agreed that bicycles should have headlight, but it would be very expensive. It is a common practice in rural India to organize weekly market over the road side, to have marriage halls and procession over the public roads, use public roads for bursting crackers and drying grains. It is also common to see people trying to cross a closed level cross. Nearly 70% of the participants agreed that these practices would increase the rates of RTAs in rural areas.

Few practice questions were asked like use of helmets/ seat belts, blowing horns while overtaking, use of indicators while turning and looking both sides while crossing. It is reported that more than 90% of the pedestrians feel unsafe while crossing roads and they form more than 50% of the victims for RTAs.[25] In this study 97% of the participants responded saying they would look both sides for traffic before crossing the road. Use of indicators is an uncommon sign seen in India. Nearly 90% of the participants said they would use indicators before turning. It is reported that use of seat belt would reduce the risk of death by 65%.[26] Similarly use of helmet prevent the risk of fatalities among motorcycle riders.[27] Among our study participants only 37.5% used helmet or seat belt regularly. 16.2% never used helmets or seat belts. This is an alarmingly high number which needs immediate attention if we are serious about ensuring road safety.

**CONCLUSION:** Road safety starts with public awareness. Irrespective of whether somebody own a vehicle or not, traffic rules should be taught to everyone to make our country RTA free.

**REFERENCES:**


1. Ameratunga S, Hijar M, Norton R. Road-traffic injuries: confronting disparities to address a global-health problem. The Lancet. 2006; 367 (9521): 1533–40.
2. SRTT & NRTT | Epidemiology of Road Traffic Accidents in India: a Review of Literature [Internet]. [cited 2014 Oct 11]. Available from: http://www.srtt.org/road_traffic_accidents.htm.
3. Mohan D. Road traffic injury prevention training manual [Internet]. Geneva: World Health Organization; 2006 [cited 2014 Oct 11]. Available from: http://site.ebrary.com/id/10161479.
4. Gururaj G. Road traffic deaths, injuries and disabilities in India: current scenario. Natl Med J India. 2008; 21 (1): 14.
5. Farooqui JM, Chavan KD, Bangal RS, Syed MMA, Thacker PJ, Alam S, et al. Pattern of injury in fatal road traffic accidents in a rural area of western Maharashtra, India. Australas Med J. 2013; 6 (9): 476–82.
6. Internet Scientific Publications [Internet]. [cited 2014 Oct 11]. Available from: http://ispub.com/IJE/9/1/4726.
7. B0430406.pdf [Internet]. [cited 2014 Oct 14]. Available from: http://www.iosrjournals.org/iosr-jdms/papers/Vol4-issue3/B0430406.pdf.

8. iajt06i3p129.pdf [Internet]. [cited 2014 Oct 11]. Available from: http://medind.nic.in/iaj/t06/i3/iajt06i3p129.pdf.
9. Raj CP, Datta SS, Jayanthi V, Singh Z, Senthilvel V. Study of knowledge and behavioural patterns with regard to road safety among high school children in a rural community in Tamil Nadu, India. Indian J Med Spec [Internet]. 2011 [cited 2014 Oct 12];2(2). Available from: http://www.ijms.in/articles/2/2/study-of-knowledge-and-behavioural-patterns-with-regard-to-road-safety-among-high-school-children-in-a-rural-community-in-tamil-nadu-India.html.
10. Kulkarni V, Kanchan T, Palanivel C, Papanna MK, Kumar N, Unnikrishnan B. Awareness and practice of road safety measures among undergraduate medical students in a South Indian state. J Forensic Leg Med. 2013 May; 20 (4): 226–9.
11. Swami HM, Puri S, Bhatia V, others. Road safety awareness and practices among school children of Chandigarh. Indian J Community Med. 2006; 31 (3): 199–200.
12. Hussain T, Shu L, Sosorburan T, Adji AS, Khan AH, Raja AF. Road traffic accidents: an observational and analytical study exploring the hidden truths in Pakistan and South East Asian countries. Healthline. 2011; 2 (1): 52–7.
13. Dastane T author has posted comments on this articleSarang, 10 T| S, 2009, Ist 12 11am. Driving schools under RTO scanner [Internet]. The Times of India. [cited 2014 Oct 13]. Available from: http://timesofindia.indiatimes.com/city/pune/Driving-schools-under-RTO-scanner/articleshow/4992319.cms.
14. List of Penalties [Internet]. [cited 2014 Oct 13]. Available from: http://transport.bih.nic.in/Penalties.htm.
15. Driving licence in India [Internet]. Wikipedia, the free encyclopedia. 2014 [cited 2014 Oct 13]. Available from: http://en.wikipedia.org/w/index.php?title=Driving_licence_in_India&oldid=628796361.
16. Mishra B, Sinha (Mishra) ND, Sukhla S, Sinha A. Epidemiological Study of Road Traffic Accident Cases from Western Nepal. Indian J Community Med Off Publ Indian Assoc Prev Soc Med. 2010 Jan; 35 (1): 115–21.
17. Amer A, Rakha H, El-Shawarby I. Novel Stochastic Procedure for Designing Yellow Intervals at Signalized Intersections. J Transp Eng. 2012 Jun; 138 (6): 751–9.
18. Peden M, World Health Organization. World report on road traffic injury prevention: information kit. Geneva, Switzerland: World Health Organization; 2004.
19. Microsoft PowerPoint - India.ppt - 2.12.India_.pdf [Internet]. [cited 2014 Oct 14]. Available from: http://www.unescap.org/sites/default/files/2.12.India_.pdf
20. Naci H, Chisholm D, Baker TD. Distribution of road traffic deaths by road user group: a global comparison. Inj Prev J Int Soc Child Adolesc Inj Prev. 2009 Feb;15(1):55–9.
21. Two Wheeler Safety. cdr - fs5.pdf [Internet]. [cited 2014 Oct 14]. Available from: http://www.nimhans.kar.nic.in/epidemiology/bisp/fs5.pdf.
22. Two wheelers are meant for two people only | India Transport Portal [Internet]. [cited 2014 Oct 14]. Available from: http://indiatransportportal.com/2012/07/two-wheelers-are-meant-for-two-people-only/.

23. Wadhwaniya S, Gupta S, Tetali S, Hyder A. The validity of self-reported helmet-use among motorcyclists in India. Inj Prev. 2012 Oct 1; 18 (Suppl 1): A197–A197.
24. Lissy KS, Cohen JT, Park MY, Graham JD. Cellular phone use while driving: Risks and benefits [Internet]. Harvard Center for Risk Analysis, Harvard School of Public Health; 2000 [cited 2014 Oct 14]. Available from: http://cellphonefreedriving.ca/media/harvard.pdf.
25. Road.pdf [Internet]. [cited 2014 Oct 14]. Available from: http://lawcommissionofindia.nic.in/reports/road.pdf.
26. Cummings P, McKnight B, Rivara FP, Grossman DC. Association of driver air bags with driver fatality: a matched cohort study. BMJ. 2002 May 11; 324 (7346): 1119–22.
27. Evans L, Frick MC. Helmet effectiveness in preventing motorcycle driver and passenger fatalities. Accid Anal Prev. 1988 Dec; 20 (6): 447–58.

**AUTHORS:**

1. Sherin Paul
2. Sam Marconi David
3. Mehul Chourasia
4. Fibi Ninan
5. Sharon Rymbai

**PARTICULARS OF CONTRIBUTORS:**

1. Assistant Professor, Department of Community Health, Christian Medical College, Vellore.
2. PG Registrar, Department of Community Health, Christian Medical College, Vellore.
3. Research Officer, Department of Community Health, Christian Medical College, Vellore.
4. Intern, Department of Community Health, Christian Medical College, Vellore.
5. Intern, Department of Community Health, Christian Medical College, Vellore.

**NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Sherin Susan Paul,
Department of Community Health,
Christian Medical College,
Vellore, Tamil Nadu-632002.
E-mail: sherinpaul@cmvellore.ac.in

Date of Submission: 15/10/2014.
Date of Peer Review: 16/10/2014.
Date of Acceptance: 05/11/2014.
Date of Publishing: 12/11/2014.