Original Research Article

Effectiveness of video-assisted teaching on knowledge regarding road traffic rules among college students, Puducherry

Usha Chakali¹, Ronur S. Ramesh¹, Jeby J. Olickal², Gayathri Surendran²,
Venkatachalam Jayaseelan²*¹

¹College of Nursing, ²Department of Preventive and Social Medicine, Jawaharlal Institute of Postgraduate Medicine and Research, Puducherry, India

Received: 15 July 2020
Accepted: 01 September 2020

*Correspondence:
Dr Venkatachalam Jayaseelan,
E-mail: drvkenkatpigi@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Road traffic accidents are considered a public health problem leading to high mortality and morbidity, especially among adolescents and young adults. We aimed to assess the effectiveness of video-assisted teaching to improve the knowledge of road traffic rules among college students and the factors associated with the difference in knowledge.

Methods: We conducted pre-test post-test study among students from a Government Arts and Science college in Puducherry, South India from August to September 2019. We assessed the knowledge related to road traffic signs, speed limits and penalties related to violation of traffic rules. A video-assisted health education session was provided to all, and change in knowledge assessed. Factors associated with the difference in scores were assessed using an independent t-test or ANOVA test.

Results: A total of 355 college students were included in the study. Of them, 2 (0.56%) had adequate knowledge, 317 (89.3%) had moderate knowledge and 36 (10.14%) had inadequate knowledge regarding traffic rules in the pre-test. During post-test, 47 (13.24%) had moderate knowledge and 308 (86.7%) had adequate knowledge. Overall mean (SD) knowledge score was increased from 14.7 (2.8) to 23.6 (2.5) (p<0.001). Sociodemographic factors were not significantly associated with a change in knowledge scores.

Conclusions: There was a significant difference in knowledge scores of students after the intervention. Continuous reinforcement and education about safety measures can motivate and bring a positive change among them in strictly following traffic rules.

Keywords: Effectiveness, Knowledge, Video-assisted teaching, Road traffic rules, College students

INTRODUCTION

Road traffic accidents (RTA) are defined as “any occurrence that arises on a way or road open to public traffic causing in one or more persons being wounded or killed, where at least one moving means of transportation is involved”¹ according to the World health organisation (WHO) deaths related to road traffic accidents were estimated at 1.25 million globally. This translates to one person being killed every 25 seconds due to road accidents. RTA accidents are the most important cause of death among people aged between 15 and 29 years.² In India, every day one person dies every six minutes due to road accidents. By 2020 the rate is expected to be greater than one person every three minutes. Tamil Nadu accounts for 14.5% of total road accidents in the country.³ The united nations general assembly declared 2011-2020 as the Decade of Action for Road safety intending to stabilize and reduce the increasing trend that suggests injuries due to road traffic accidents.⁴ The trends related to injuries and deaths concerning road traffic accidents

http://www.ijcmph.com
are becoming alarming in nations like India. The number of mortalities and ill-health related road accidents is growing progressively and is considered to be an existent public health issue. Factors related to human, vehicle, and the environment are considered to play an important role before, during, and after the occurrence of any traumatic episode related to road accidents. These include conditions of the road, poor knowledge regarding traffic rules, speed of the vehicle, number of people traveling, type of automobile, age of the person who is driving. Thus RTA has appeared as an essential public health problem which is to be attempted utilizing multidisciplinary actions. As youngsters are more susceptible, due to their emotional and biological makeup, it is important to generate attentiveness and increase their knowledge related to traffic rules. Education regarding road safety rules aims to enlighten the knowledge and understanding of traffic rules and regulations. It also helps to reinforce the youngsters regarding risk alertness and personal safety.

As more and more women drive in today’s society, it is essential to make them known to prevent themselves from road traffic accidents. This in turn would increase awareness among the general public concerning road safety measures. The present study aims to improve the knowledge of college students related to road traffic rules and compare their pre-test and post-test knowledge scores after giving the video-assisted teaching.

METHODS

We conducted a quasi-experimental study among college students using simple random sampling in a selected government arts and science college during August and September 2019 in Puducherry, South India. The study protocol was reviewed and approved by the Institute Ethical Committee of Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry.

We included female college students studying in sixteen departments in Arts and Science College. Assuming a 10% increase in knowledge due to intervention from the base knowledge of 60%, with 80% power and 95% confidence interval the calculated sample size for the study was 355. Information on age, education, residence, mode of transport, valid driving license, insurance of the vehicle, use of helmet, previous exposure to road safety measures and driving experience, and knowledge related to traffic signs, speed limit, and penalties were collected through a questionnaire. The study tool was validated by experts of the Nursing Department, Preventive and Social Medicine Department, and a Motor Vehicle inspector. The suggestions given by a team of experts were incorporated.

The data was collected after getting consent from the students. The classroom environment was conducive and adequate distance was maintained between the students.

The students were instructed not to discuss the questions and the pre-test was given over 30 minutes. The investigator explained the importance of road safety followed by was displayed to the students along with explanations related to rules and regulations of road safety. All doubts regarding were cleared during the sessions. The entire health education session lasted for 40 minutes. Post-test was conducted after one week over 30 minutes and the knowledge measured. Data from paper-based proforma were entered into Microsoft excel sheet and analyzed using Stata version 14. The categorical variables were summarized as percentages. The change in total knowledge scores before and after the intervention was assessed by using the Mc-Nemars test. The association of social demographic factors with the difference in score was assessed using an independent t-test or ANOVA test. A p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 426 students were eligible, of which 355 were chosen by simple random sampling. Socio demographic variables of the participants are shown in (Table 1). Majority (83%) of the study participants were under 20 years of age. The representation of students was slightly higher from urban areas (59%).

| Table 1: Distribution of socio-demographic details among college students, Puducherry (n=355). |
| Variable | Frequency | Percentage |
| --- | --- | --- |
| **Age (in years)** |  |  |
| 18 | 143 | 40.3 |
| 19 | 151 | 42.5 |
| 20 | 50 | 14.1 |
| 21 and above | 11 | 3.2 |
| **Stream opted** |  |  |
| BA Economics | 58 | 16.3 |
| BA English | 52 | 14.6 |
| BSc Psychology | 44 | 12.4 |
| BA Zoology | 35 | 9.9 |
| BSc Botany | 32 | 9.0 |
| BSc Mathematics | 31 | 8.7 |
| B Com | 24 | 6.8 |
| BA Sociology | 23 | 6.5 |
| BA Tamil | 23 | 6.5 |
| BSc Physics | 17 | 4.8 |
| BA Commerce | 16 | 4.5 |
| **Residence** |  |  |
| Urban | 210 | 59.2 |
| Rural | 145 | 40.8 |

Table 2 shows the details of the study participants related to the daily commute and driving experience. Nearly three-fourths of the participants used buses for transportation and recorded no previous exposure to any
educational materials on the topic of traffic rules or driving. Although only around 40% of participants reported owning either a learner’s or permanent driving license, over 50% reported having driven vehicles for any duration of time.

Table 3: Practices related to road safety among those who travel by two-wheelers among college students, Puducherry (n=55).

| Variable                                      | Frequency | Percentage |
|-----------------------------------------------|-----------|------------|
| Mode of transport                             |           |            |
| Bus                                           | 261       | 73.5       |
| Two-wheeler                                   | 55        | 15.5       |
| Others                                        | 39        | 11.0       |
| Status of driving license                     |           |            |
| Does not have a license                       | 215       | 60.6       |
| Owns a license                                | 82        | 23.1       |
| Owns a learner’s license                      | 58        | 16.3       |
| Previous exposure to classes on traffic rules |           |            |
| Present                                       | 93        | 26.2       |
| Absent                                        | 262       | 73.8       |
| Driving experience                            |           |            |
| None                                          | 166       | 46.8       |
| Less than a year                              | 108       | 30.4       |
| One year or more                              | 81        | 22.8       |

The practices related to road safety among those who regularly used two-wheelers are shown in (Table 3). Among those who commuted by two-wheelers, around 40% did not own a license, 50% did not use helmets and 60% did not own updated insurance papers for the vehicle.

Pre-test and post-test knowledge scores are summarized in Table 4. During the pre-test 0.56% of students had adequate knowledge, 89.3% had moderate knowledge and 36% had inadequate knowledge. After the intervention, 86.8% had adequate knowledge, 13.2% moderate knowledge, and none of them had inadequate knowledge. The overall mean (SD) knowledge score on the pre-test was 14.7 (2.8) and increased significantly (p<0.001) to 23.6 (2.5) after the intervention. There was no significant association for the difference in knowledge scores with socio-demographic variables (Table 5).

Table 3: Practices related to road safety among those who travel by two-wheelers among college students, Puducherry (n=55).

| Variable                                      | Frequency | Percentage |
|-----------------------------------------------|-----------|------------|
| Use of Helmet                                 |           |            |
| Yes                                           | 28        | 50.9       |
| No                                            | 27        | 49.1       |
| Insurance for vehicle                         |           |            |
| Yes                                           | 22        | 40.0       |
| No                                            | 33        | 60.0       |
| Owns a license                                |           |            |
| Yes                                           | 33        | 60.0       |
| No                                            | 22        | 40.0       |

Table 4: Comparison of pre-test and post-test knowledge of the study population among college students, Puducherry (n=355).

| Question                                                                 | Yes | Pre-test N (%) | Post-test N (%) | P value |
|-------------------------------------------------------------------------|-----|----------------|-----------------|---------|
| Knowledge regarding overtake a vehicle in front                         |     | 120 (33.8)     | 298 (83.9)      | <0.001  |
| The minimum penalty for violation of traffic rules and regulation      |     | 149 (42.0)     | 330 (93.0)      | <0.001  |
| Vehicle preceding from opposite direction should be allowed to pass     |     | 203 (57.2)     | 290 (81.7)      | <0.001  |
| Places to park the vehicle                                             |     | 264 (74.4)     | 316 (89.0)      | <0.001  |
| The maximum penalty for driving a vehicle without holding a license     |     | 104 (29.3)     | 274 (77.2)      | <0.001  |
| The minimum age for getting a license to drive motorcycle without gear  |     | 36 (10.1)      | 180 (50.7)      | <0.001  |
| The lane to use on expressway                                           |     | 90 (25.3)      | 146 (41.1)      | <0.001  |
| The cross roads sign                                                    |     | 170 (47.9)     | 279 (78.5)      | <0.001  |
| The sound horn compulsory sign                                          |     | 222 (62.5)     | 310 (87.3)      | <0.001  |
| The sign to pass the vehicle coming from the left                       |     | 48 (13.5)      | 104 (29.3)      | <0.001  |
| The minimum distance to be kept from the vehicle in front               |     | 184 (51.8)     | 270 (76.1)      | <0.001  |
| The indication of yellow light at an intersection                       |     | 124 (34.9)     | 215 (60.6)      | <0.001  |
| What to do when a vehicle involved in an accident causing injury to any person |     | 318 (89.6)     | 346 (97.5)      | <0.001  |
| How to pedestrians should walk on the road without footpath             |     | 174 (49.0)     | 264 (74.4)      | <0.001  |
| The one-way sign                                                        |     | 138 (38.9)     | 296 (83.4)      | <0.001  |
| The penalty for drink and drive cases                                   |     | 92 (25.9)      | 279 (78.6)      | <0.001  |
| The U-turn prohibited sign                                              |     | 252 (71.0)     | 319 (89.9)      | <0.001  |
| The give way sign                                                       |     | 168 (47.3)     | 329 (92.7)      | <0.001  |

Continued.
Table 5: Association of various variables with knowledge among college students, Puducherry (n=355).

| Question                                                                 | Yes | Pre-test N (%) | Post-test N (%) | P value |
|--------------------------------------------------------------------------|-----|----------------|----------------|---------|
| The maximum permissible speed of a two-wheeler near an educational institution | 191 (53.8) | 315 (88.7) | <0.001 |
| The penalty for dangerous driving                                         | 126 (35.5) | 189 (53.2) | <0.001 |
| The overtaking prohibited sign                                            | 272 (76.6) | 324 (91.2) | <0.001 |
| The possibility of cattle on road sign                                     | 296 (83.3) | 331 (93.2) | <0.001 |
| The pedestrian crossing sign                                              | 318 (89.5) | 350 (98.6) | <0.001 |
| The broken white lines marked on the road                                 | 118 (33.2) | 185 (52.1) | <0.001 |
| The narrow road ahead sign                                                | 170 (47.9) | 260 (73.2) | <0.001 |
| The hospital sign                                                         | 258 (72.7) | 340 (95.8) | <0.001 |
| The maximum permissible speed of a motorcycle                            | 207 (58.3) | 298 (83.9) | <0.001 |
| The sign to stop the vehicle coming from the front                         | 313 (88.2) | 331 (93.2) | 0.002  |
| The compulsory turn left sign                                             | 65 (18.3)  | 225 (63.4) | <0.001 |
| The penalty for not giving passage to emergency vehicles                   | 81 (22.8)  | 301 (84.8) | <0.001 |
| Total Score, mean (SD)                                                    | 14.7 (2.8) | 23.6 (2.5) | <0.001 |

| Variable                          | Mean (SD) | P value |
|-----------------------------------|-----------|---------|
| Age (in years)                    |           |         |
| 18                                | 8.4 (3.2) | 0.06    |
| 19                                | 9 (2.8)   |         |
| 20 and above                      | 8 (2.9)   |         |
| Stream opted                      |           |         |
| BA Economics                      | 8.4 (2.7) |         |
| BA English                        | 8.3 (3)   |         |
| BSc Psychology                    | 8 (3)     |         |
| BA Zoology                        | 9.5 (3)   |         |
| BSc Botany                        | 8.8 (2.4) |         |
| BSc Mathematics                   | 8.7 (3)   | 0.07    |
| B Com                             | 9 (3)     |         |
| BA Sociology                      | 10.8 (2.6)|         |
| BA Tamil                          | 8 (2.1)   |         |
| BSc Physics                       | 7.5 (4.6) |         |
| BA Commerce                       | 8 (2.8)   |         |
| Residence                         |           |         |
| Urban                             | 8.6 (3.1) | 0.78    |
| Rural                             | 8.5 (2.9) |         |
| Mode of transport                 |           |         |
| Bus                               | 8.7 (2.8) | 0.68    |
| Two-wheeler                       | 8 (3.7)   |         |
| Others                            | 8.6 (3.2) |         |
| Driving license                   |           |         |
| No license                        | 8.6 (3.1) | 0.68    |
| Learner’s license                 | 8.3 (2.8) |         |
| Permanent license                 | 8.6 (2.7) |         |
| Insurance                         |           |         |
| Yes                               | 8.5 (2.9) | 0.46    |
| No                                | 7.7 (4.1) |         |
| Use of helmet                     |           |         |
| Yes                               | 9 (2.9)   | 0.05    |
| No                                | 7.1 (4.1) |         |
| Previous exposure                 |           |         |
| Yes                               | 8.8 (2.8) | 0.40    |
| No                                | 8.5 (3)   |         |

Continued.
The current study findings are supported by a cross-sectional study on an educational intervention to improve awareness about road safety conducted among 159 school children in Indore. The pre-test and post-test knowledge revealed that about U-turn prohibition, the knowledge was increased by 11% similar to present study result of 18%, concerning one-way sign, it was increased by 22.6% similar to our study result of 23.2% and about horn blow compulsory sign it was increased by 22.7% which showed a similar result to our study result of 24.8%.12

In contrast to our study, a quasi-experimental study was done on the effect of implementing traffic safety program on driver’s knowledge regarding traffic safety practices in Egypt among 40 drivers 2018, revealed that concerning pedestrian crossing, 60% were aware whereas in our study 89.5% were aware, similarly regarding the narrow road ahead sign only 10% were aware but, in our study, it was 48%. This difference may be due to video teaching being more effective when compared to other interventions.13

The strengths of the current study are that the sample size was adequate and there was no attrition among participants. A limitation was that the sample captures only women.

**CONCLUSION**

There was a significant difference in knowledge scores of students after the intervention. Continuous reinforcement and educating them about safety measures can motivate and bring a positive change among them in strictly follow the norms of traffic.

**Funding:** No funding sources  
**Conflict of interest:** None declared  
**Ethical approval:** The study was approved by the Institutional Ethics Committee

**REFERENCES**

1. Singh M. Awareness and practice of road safety rules among secondary school students in Jaipur, Rajasthan. Nitte J of Heal Sci. 2018;8:25-31.  
2. World Health Organization. “Global status report on Road Safety. Geneva: World Health Organization. 2018.  
3. Indhumathy, Thenmozhi. Assess the knowledge and practice on road safety regulations among primary school children in rural community. Intl J Med Sci. 2016;3:1-4.
4. Mary E, Chitra A, Arunmozhi R, Doris S T. A cross sectional study to assess the knowledge, attitude and practice towards road safety rules and regulations among higher secondary school students in Chennai. Indian J Basic Applied Med Res. 2016; 779-89.

5. Gopalakrishnan S. A public health perspective of road traffic accidents. J of Family Med and primary care. 2012;1:144-50.

6. Johnson I. Action to reduce road casualties. World Health Forum. 1992;13:154-62.

7. Mallikarjuna G P, Latha G S, Babu D V, Thejraj H K. Prevalence of road traffic accidents in children: Retrospective study in tertiary centre. Int J of contemporary paediatrics. 2017;4:477-81.

8. Sujatha V, Muthumari P. Effectiveness of structured teaching programme on road safety among adolescents in boys higher secondary school at Ussoor, Vellore. Int J Appli Resea. 2019;5:106-8.

9. Dahiya H, Lokanathan V, Rani S. Study to evaluate the effectiveness of video assisted teaching on road safety measures among students in selected schools of Rohtak, Haryana. Int J Interdiscip Multidiscip Stu. 2016;3:11-4.

10. Rashid D, Akhter A. Effectiveness of structured teaching programme on knowledge regarding prevention of road traffic accidents among adolescents (13-18 years) in selected schools of Baramulla district. Int. Annals Med. 2017;1:176-80.

11. Okafor I, Odeyemi K, Dolapo D, Ilika A, Omosun. Effectiveness of road safety education in Nigeria using a quasi-experimental trial: Findings from the road safety intervention project. J Afri Safe Promo. 2014;2:1-12.

12. Mahawar P, Dixit S, Khatri A K, Rakode R, Kirar S, Jain R, et al. An educational intervention to improve awareness on road safety: A study among school-going teenagers in Indore. Natio J Comm Med. 2013;4:529-32.

13. Mohamed AA, Mohamed NY, Mohamed MA. Effect of implementing traffic safety awareness program on driver’s knowledge regarding traffic safety practices in Alexandria- Egypt. J Nurs Heal Sci. 2018;7:39-56.

Cite this article as: Chakali U, Ronur SR, Olickal JJ, Surendran G, Jayaseelan V. Effectiveness of video-assisted teaching on knowledge regarding road traffic rules among college students, Puducherry. Int J Community Med Public Health 2020;7:3818-23.