

Effectiveness of Peer-Led Education on Knowledge and Attitude among Adolescents regarding Road Safety

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Abstract

Background and Objective: Children and adolescents are the most vulnerable groups for road traffic injuries in India (39%). Hourly, forty youngsters die in road traffic crashes. Road safety education aims at reducing this burden. Peer-led education (PLE) is a credible approach influencing students to modify their behavior positively. This study aimed to evaluate the effectiveness of PLE in terms of knowledge and attitude toward road safety among adolescents. **Methodology:** A single-group pretest–posttest design among 113 adolescents was conducted using a two-stage sampling technique. Ten selected and trained student peers provided PLE on road safety to 103 fellow students using a teaching aid. Effectiveness of PLE on knowledge and attitude was assessed pre- and postintervention. **Results:** Post PLE, the mean knowledge score of subjects increased from 10.5 to 17.5 with a significant mean difference of -6.9 ($P < 0.001$). The mean attitude score of subjects had increased from 46.7 to 48.1. A positive statistically significant correlation ($P = 0.04$) between knowledge and attitude and associations between certain sociodemographic variables were noted. **Conclusion:** Knowledge and attitude of subjects regarding road safety improved after PLE. Innovative teaching methods can be used to promote healthy behaviors among adolescents.

Keywords: Adolescents, attitude, effectiveness, knowledge, peer-led education, road safety

INTRODUCTION

The World Health Organization defines road traffic injuries (RTIs) as “fatal or nonfatal injuries incurred because of a road traffic crash.” Road traffic crash is defined as “collision or incident that may or may not lead to injury, occur on a public road and involve at least one moving vehicle.” Children and adolescents are among the most vulnerable for RTI.^[1] Globally, RTI is the leading cause of death among young people aged 15–29 years. Morbidity and mortality related to RTI among adolescents is high compared with others. It is the second leading cause in the 10–14-year and 20–24-year age groups.^[2] RTI is estimated to become the 5th leading cause of death by 2030.^[3]

Safety near school zones is a major cause for concern. Inadequate road safety measures can adversely affect the safety of school-going adolescents. Adolescents below 15 years of age make 39% of the total population of India.^[3] RTI, violence, and self-harm are the leading causes for morbidity and mortality among young adolescents.^[4] Hourly, forty young people die in road traffic crashes.^[4] Road safety is a serious concern in

India which is going through rapid urbanization coupled with increasing road networks and highest motorization growth rates in the world. India adopted the National Health Policy for children in August 1974 and recognized children as the “nation’s supremely important asset.”^[3] In keeping with that, schoolchildren need urgent education on road safety.

Road safety education aims at reducing the harm resulting from RTI, by enhancing knowledge among road users, and therefore influencing their behavior on roads.^[4,5] If children are educated on road safety today, they will both put it into practice today and set an example for others in the community as adults of tomorrow.

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Peer-led education (PLE) is considered a credible approach to exert important influence among students, to modify their behavior. A peer educator typically has a higher self-esteem, self-confidence, and ability to teach information and skills, thereby changing attitude and behavior in other students.^[6]

The primary investigator in this study, a community-based health professional and having witnessed devastation and disability secondary to RTI among younger adolescents, proposed to evaluate the effectiveness of PLE regarding knowledge and attitude about road safety among adolescents. The objectives of this study included assessing knowledge and attitude among high school students about road safety and evaluating the relationship between these two variables pre- and postintervention and assessing for any association with selected sociodemographic variables.

MATERIAL AND METHODS

The study was conducted using a quantitative, one-group pretest and posttest research design among 113 students of 8th and 9th grades from a government higher secondary school of Vellore district. Prior to starting the study, permission was obtained from the District Education Officer and the school authorities. Assent from subjects and informed consent from their parents were obtained after a detailed explanation. Students who met the inclusion criteria were selected using a two-stage sampling technique. In the first stage, one government higher secondary school was selected by simple random sampling technique using a lot method from a list of 5 schools which had more than 100 students studying in 8th and 9th standards. In the 2nd stage, 5 clusters (3 sections from 8th and 2 from 9th) were chosen from 7 clusters present in the selected school by simple random sampling technique using a lot method. A total of 113 students were recruited for the study, 80 students from 8th grade and 33 from 9th based on the study criteria. A pretest was conducted for all the students; the top ten scorers were identified as peer trainers and were given structured training on road safety. These peer trainers then conducted PLE for the remaining 103 students using a structured teaching aid that contained general information, pedestrian and cyclist safety, traffic signs, traffic signals, traffic symbols, rules, and regulations for a pedestrian/cyclist/motorist. The study included students who were available in school during the period of study to sign the informed assent, who could read and write Tamil or English and get parental informed consent. Data included information on sociodemographic variables. Self-reported questionnaire was used to obtain data on knowledge and attitude. Knowledge on road safety regulations was assessed using multiple-choice questions, and the attitude was assessed using a five-point Likert scale. Effectiveness of PLE with regard to knowledge and attitude was assessed pre- and posteducation. Confidentiality was maintained throughout the study. Collected data were analyzed using descriptive and inferential statistics.

RESULTS

A total number of participants were 113 and 10 among them were peer educators. Of the 103 participants, 37 were girls and 66 were boys. The sociodemographic variables of the students are depicted in Table 1. Of the total number of 103,

Table 1: Distribution of subjects according to their sociodemographic variables (n=103)

Demographic variables	Category	n (%)
Age (years)	<14	55 (53.4)
	≥14	48 (46.6)
Gender	Male	66 (64.1)
	Female	37 (35.9)
Parent's educational status	Father	
	Literate	88 (85.4)
	Illiterate	15 (14.6)
	Mother	
Father's occupation	Literate	83 (80.6)
	Illiterate	20 (19.4)
	Daily wages work	63 (61.2)
	Self-employed	22 (21.4)
Mother's occupation	Private sector work	12 (11.7)
	Government sector work	6 (5.8)
	Homemaker	60 (58.3)
	Daily wages work	20 (19.4)
Type of vehicle at home	Self-employed	7 (6.8)
	Private sector work	14 (13.6)
	Government sector work	2 (1.9)
	Bicycle	31 (30.1)
Mode of transport to school	Two-wheeler	61 (59.2)
	Four-wheeler	4 (3.94)
	No vehicle	7 (6.7)
	By walk	77 (74.8)
Person riding vehicle for transportation to school	By vehicle	26 (25.2)
	Self-riding	6 (5.8)
	Parents	20 (19.4)
Distance between school and home (km)	Not applicable	77 (74.8)
	<5	86 (83.5)
	5–10	13 (12.6)
Riding/driving experience (year)	>10	4 (3.9)
	<1	34 (33)
	>1	32 (31.1)
Type of vehicle used for riding/driving	No experience	37 (35.9)
	Bicycle	28 (27.2)
	Two-wheeler	48 (46.6)
	Four-wheeler	1 (1)
Exposure to injury or accident	Not used	26 (25.2)
	Once	44 (42.7)
	Twice	11 (10.7)
	>2 times	23 (22.3)
Sources of information on road safety	No exposure	25 (24.3)
	Family	33 (32)
	Friends	11 (10.7)
	Schoolteacher	34 (33)
	Health personnel	1 (1.0)
	None	24 (23.3)

48 (47%) reported using a motorized two-wheeler, 28 (27%) a bicycle, 1 (1%) reported driving a four-wheeler, and 26 (25%) reported not using a vehicle. One-third 33% of the participants reported having driven on the road for less than a year and 32 (31%) for more than 1 year. One-fourth (24) of the subjects had never been involved in RTI, 44 (42%) were injured once, 11 (11%) twice, and 23 (22%) had been injured 3 or more times in the previous 1 year. Majority 61 (60%) of the families had a motorized two-wheeler. A large number (75%) of the students walked to school. Only 38% of the participants had awareness regarding the common traffic signs and signals at baseline. This awareness was more among boys (44%) when compared to girls (27%).

DISCUSSION

PLE technique in schools is a satisfactory model of education and guidance for the advancement of wellbeing, as has been reported in previous studies.^[7] PLE can improve understanding and eventually in modifying adolescent risk behavior. In our study, there was a significant improvement in the knowledge and attitude of students regarding road safety post-PLE. The mean pretest scores for knowledge and attitude were 10.5 ± 4.5 and 46.7 ± 5.4 , respectively. This increased significantly to 17.5 ± 3.7 and 48.1 ± 5.5 , respectively, after PLE ($P \leq 0.0001$) [Table 2].

Behavior of adolescents is based on their knowledge and subsequently their attitude changes. Correlation between knowledge and attitude of the study participants was performed using pre- and postintervention scores. There was a poor correlation between knowledge and attitude in the pretest scores, and Pearson correlation coefficient was 0.034 ($P = 0.729$) [Figure 1]. Two weeks post intervention, a positive and statistically significant linear correlation was observed between knowledge and attitude, and Pearson correlation coefficient® was 0.204 ($P = 0.04$).

A similar study was done by D’Souza and Renuka in Bangalore (2013), to evaluate “Effectiveness of Child-to-Child Programme on Road Safety Measures.” They demonstrated a marked increase in the mean knowledge from 45% in the pretest scores to 80% in the posttest.^[8] Zeedyk *et al.*, in 2001 at the United Kingdom, in their study titled “Children and road safety: Increasing knowledge does not improve behavior” reported that knowledge among their study participants increased in the 2nd posttest done 6 months after administering the health education and that the effect was persistent.^[9]

Table 2: Overall effectiveness of peer-led education on knowledge and attitude regarding road safety among the subjects

Mean score	Pretest (n=101)	Posttest (n=101)	Mean difference scores	T-test	P
Knowledge	10.50	17.52	-6.98	-12.09	<0.001
Attitude	46.68	48.06	-1.37	-1.965	0.052

A similar study was conducted by Jyotsna Jacob and Rajeev in Faridabad in 2018, to assess knowledge and attitude regarding road safety measures among college-going adolescents using two-wheelers regularly. Another school- and college-based study done in Jaipur to assess knowledge and attitude regarding road safety measures among teenage drivers reported that 59% of two-wheeler riding teenagers had a moderate level of knowledge and 70% had a moderately favorable level. A positive correlation ($r = +0.314$) was reported between knowledge and attitude.^[10]

Adolescents continuously connected with people and their surroundings. In our study, school as a primary source of information emerged as the single most important factor, associated with higher mean knowledge score. At baseline, 48% of the students aged ≥ 14 years had poor knowledge when compared to 78% among those aged < 14 years. Of the boys, 44% had good or moderate knowledge, and of the girls, 22% had knowledge about road safety. This is comparable to a school-based study in Chennai, Tamil Nadu, which demonstrated that boys and children with literate parents had higher knowledge compared to girls and those whose parents were illiterate.^[10]

In a study done among high school students in Rohtak, Haryana,^[11] to evaluate the effectiveness of Video-Assisted Teaching on Road Safety Measures, there was no statistically significant association between selected demographic variables and knowledge and attitude scores regarding road safety measures. A nationwide survey was conducted among Spanish primary, secondary, and high school students, to study the relationship between demographic factors, road safety education, and risky behaviors.^[12] Here, in contrast to the study in Rohtak, it was noted that age was significantly and negatively correlated with risky behavior, which means older age is associated with less risky behavior on the road. The researchers also noted that knowledge about road safety

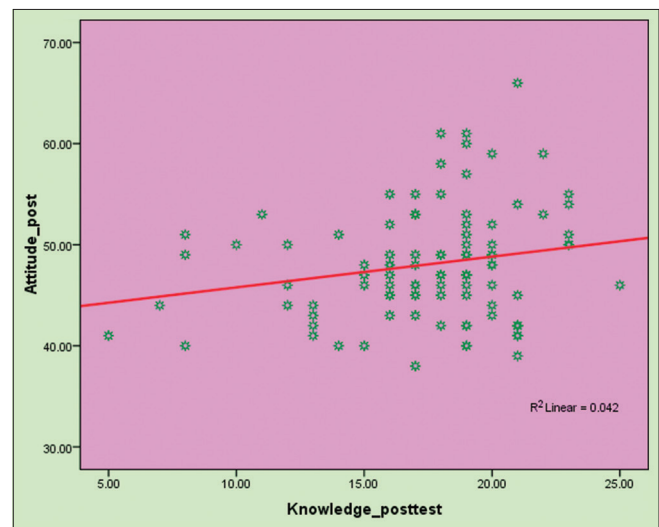


Figure 1: Correlation of posttest knowledge and attitude of subjects regarding road safety correlation between posttest knowledge and attitude

did not necessarily translate to less risky behavior. They concluded that early and systematic education on road safety in schools and the community was essential to reduce risky behaviors.^[2] Findings in all the above studies are similar to those in this study. PLE is generally effective in creating awareness among teenage students. “Peer educators are the most important part of the course and should be well known in the community, have the ability to learn and the ability to teach the course.”^[13]

An encouraging finding in this study was that not only the study participants from the 8th and 9th grade, but also the senior class students were eager to learn from the peer educators. This informal transfer of knowledge had an important effect on the knowledge and attitude of students in senior classes. It also led to some of the nonparticipants giving suggestions on how to improve their school environment such as installing a speed breaker, i.e., zebra crossing, and a “school zone” signboard near the school. Discussion of our study findings and recommendations to the school and highway authorities resulted in a few positive changes in the school environment. The signboard and initial work to have a zebra crossing and speed breaker on the highway were done.

CONCLUSION

Knowledge and attitude of adolescents regarding road safety improved considerably after the intervention, and this change was statistically significant. Innovative methods of teaching can be planned and implemented to promote healthy behaviors among adolescents. Further comparative and exploratory studies should be done using structured teaching modules by health-care professionals to identify the factors that influence knowledge, attitude, and practice with larger sample size using a PLE model.

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Conflicts of interest

There are no conflicts of interest.

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