

A Pre-Experimental Study to Assess the Effectiveness of Video Assisted Teaching on Knowledge Regarding Traffic Rules Among Children in Selected Schools of Pune City

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ABSTRACT

Road traffic accidents (RTAs) are a major global public health concern, claiming over 1.25 million lives annually, with children among the most vulnerable groups. In India, one person dies every six minutes due to RTAs, with a significant proportion involving school-going children. **Aim:** The study aimed to assess the effectiveness of video-assisted teaching in improving knowledge regarding traffic rules among children in selected schools of Pune City. **Methodology:** A pre-experimental one-group pre-test post-test design was adopted. Sixty children aged 6–10 years were selected using purposive sampling from schools in Pune City. Data were collected using a semi-structured questionnaire with 15 items on traffic rules. Content validity was ensured through expert review, and tool reliability was confirmed ($r = 0.9648$). **Results:** Pre-test findings showed that 76.67% of children had poor knowledge (Mean = 5.57, SD = 2.39). Post-intervention, 83.33% achieved excellent knowledge (Mean = 13.52, SD = 1.40). The paired t-test revealed a highly significant improvement ($t = 23.74$, $p = 0.00001$). Chi-square analysis indicated no significant association between demographic variables and post-test knowledge, confirming intervention effectiveness across groups. **Conclusion:** Video-assisted teaching proved to be a highly effective educational tool in enhancing children's knowledge of traffic rules, independent of demographic factors.

Keywords: Road safety, Traffic rules, Video-assisted teaching, Pre-experimental study, School children.

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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

In Bangalore city, 628 people died in 2000 and 659 were killed in 2001 nearly 9000 people have been injured in accidents in 2002, while the number of

injured in the last two years was around 84,000 and 900 deaths in 2004, seven hundred and four (704) people died in 2005. Nearly 7000 persons died in road accidents annually in Karnataka and the numbers alarmingly increasing.⁴

NEED OF STUDY

Road traffic accidents (RTA) cause more than 1.18 million deaths each year globally, impacting families emotionally and financially. In India, road accidents contribute to significant fatalities, particularly among young people, with an alarming rise in school bus-related accidents.⁵ In Maharashtra, thousands of children are injured or killed annually due to road accidents, underscoring the urgency for better road safety education. With fewer children walking to school due to increased parental driving, road-crossing skills are declining.⁶ As children are often left unsupervised after school, they face risks, which could be mitigated through structured teaching programs that

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focus on critical safety behaviours like "stop, look, and listen" and understanding pedestrian signs and traffic lights.⁷

Research, such as the study by Nitty and Mankumari (2018), shows that video-assisted teaching effectively improves children's road safety knowledge, with significant gains from pre-test to post-test.⁸ Similarly, Usha et al. (2020) demonstrated that video-based teaching increased college students' awareness of traffic rules. These findings support the need for structured road safety programs that can enhance children's knowledge and behaviour, ultimately reducing accidents.⁹

AIM OF THE STUDY

The aim of this pre-experimental study is to assess the effectiveness of video-assisted teaching on enhancing children's knowledge regarding traffic rules in selected schools of Pune City. The study intends to evaluate the impact of video-based education on improving awareness and understanding of traffic safety among schoolchildren, thereby promoting safer road behaviors.

METHODOLOGY

This chapter outlines the methodology employed in this pre-experimental study aimed at assessing the effectiveness of video-assisted teaching on children's knowledge of traffic rules. The study utilized a pre-experimental research design, focusing on a dependent variable (knowledge of traffic rules among children) and an independent variable (video-assisted teaching on traffic rules).

The research was conducted in selected schools of Pune city, with school-going children aged 6 to 10 years serving as the target population. A sample of 60 children was selected using a non-probability purposive sampling technique. The study aimed to include children who could understand and comprehend video-assisted teaching, while excluding those with hearing impairments, neurological disorders, or other chronic illnesses.

The tool used for data collection consisted of two sections. Section A gathered demographic information such as age, gender, prior knowledge of traffic rules, travel habits, and experience with road accidents. Section B consisted of a semi-structured questionnaire assessing the children's knowledge of traffic rules. The questionnaire contained 15 questions, with scores ranging from 0 to 15, categorized as poor (0-6), good (7-12), or excellent (13-15).

To ensure the tool's validity, content validity was established through expert review. Reliability was

assessed using the test-retest method, yielding a high reliability coefficient of +0.9648, indicating the tool's consistency. A pilot study was conducted with six participants to assess the feasibility and improve the design of the study. Written informed consent was obtained from both the educational institutions and participants' parents, ensuring ethical consideration throughout the study. The study was approved by the institution's ethical committee, with anonymity and confidentiality ensured for all participants.

Data analysis involved both descriptive and inferential statistics, including the calculation of mean, mode, standard deviation, and inferential methods to compare pre-test and post-test scores of the participants. The findings were analyzed to evaluate the effectiveness of video-assisted teaching in improving children's knowledge of traffic rules.

RESULT

Section I: Demographic Data of the Sample.

The demographic data from the study reveals some important insights into the participants' characteristics. Among the participants, the majority were aged between 6 to 9 years, with the highest proportion (31.67%) falling within the 6-7 years' age group, while 13.33% were in the 9.1-10 years range. Gender distribution was relatively balanced, with 51.67% male and 48.33% female participants. A striking finding was that the vast majority (96.67%) had never learned about traffic rules before, suggesting a significant gap in road safety knowledge among the children. Regarding their modes of travel to school, most children (40%) used a school bus, followed by walking (23.33%) and bicycles (20%). When asked about road accident experiences, 20% of participants reported having witnessed or been involved in a road accident, while the remaining 80% had no such experiences. These findings provide a clear context for understanding the children's exposure to traffic rules and their potential need for road safety education.

Section II: Data Related to Level of Knowledge Regarding Traffic Rules Among Children in Selected Schools of Pune City.

Table no.1 Related to level of Knowledge n=60

LEVEL OF KNOWLEDGE TEST	Pre test				Post test			
	f	%	Mean	SD	f	%	Mean	SD

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POOR (0 - 6)	4	7									
	6	6				0	0				
GOOD (7-12)	1	2	5.	2		1	1	1			
	2	0	5	3		0	6	3.			
			7	9		7	7	2			
EXCELLEN T (13-15)	2	3.				5	8				
		3				0	3.				
		3				3	3				

The analysis of data showed a significant difference between the pre-test and post-test knowledge levels of children regarding traffic rules. In the pre-test, the majority of children (76.67%) were found in the poor knowledge category, with a mean score of 5.57 ± 2.39 , indicating that most of them lacked adequate awareness of basic traffic rules and safety measures. Only 20% of the children had good knowledge, and a very small proportion (3.33%) demonstrated excellent knowledge. These findings highlight the insufficient baseline understanding of traffic safety among school children, which could predispose them to unsafe practices on the road. Following the administration of video-assisted teaching, the post-test results revealed a remarkable improvement in knowledge levels. None of the children remained in the poor knowledge category, 16.67% attained good knowledge, and the vast majority, 83.33%, achieved excellent knowledge. The post-test mean score increased to 13.52 ± 1.40 , which reflects a substantial gain in knowledge when compared to the pre-test mean. The improvement in scores clearly demonstrates the effectiveness of video-assisted teaching as an innovative and engaging educational method. It not only enhanced children's understanding but also ensured better retention of traffic rules, which is crucial in promoting long-term safe behaviour. Overall, the results suggest that structured teaching through audiovisual aids can play a vital role in strengthening road safety awareness among children and can be considered a valuable approach for school-based health education programs.

Section III: Data Related To Effectiveness Of Video Assisted Teaching On Knowledge Regarding Traffic Rules Among Children In Selected Schools Of Pune City.

Table No.2: Related to compare the effectiveness of knowledge score regarding traffic rules among children before and after the intervention. n=60

EFFECTIVENESS OF VIDEO ASSISTED TEACHING ON KNOWLEDGE REGARDING TRAFFIC RULES	M	S	D	T test calculated value	P value	Remark
Pre test	5.57	2.39	59	23.74	0.0001	Significant
Post test	13.52	1.40	59			

In the above table No.2 the statistical analysis of the effectiveness of video-assisted teaching on children's knowledge regarding traffic rules shows a significant improvement from pre-test to post-test. The pre-test mean score was 5.57 with a standard deviation of 2.39, while the post-test mean score was 13.52 with a standard deviation of 1.40. The t-test calculated value was 23.74, with a p-value of 0.0001. Since the p-value is less than 0.05, this result is statistically significant, indicating that the video-assisted teaching had a substantial positive impact on the children's knowledge regarding traffic rules.

Section IV: Finding Related to Association Between Socio Demographic Variables And Level Of Knowledge.

Table no. 3: Related to Association Between Socio Demographic Variables and Level of Knowledge. n=60

Demographic Variables	Excellent	Good	Poor	D.F	Chi Table value	Chi calculated value	P value	Remark
1. Age								
a. 6-7 years	1	1	17	6	12.592	7.214	0.3	Not significant
b. 7.1 - 8 years	0	5	10					

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c. 8.1 - 9 years	1	6	1				0	ica nt
d. 9.1 - 10 years	0	0	8				2	
2. Gender								
a. Male	1	6	2				0	No t sig nif ica nt
b. Female	1	6	2	2	5.9 91	0.0 20	9 9 0	
3. Have you learned about traffic rules before?								
a. Yes	0	0	2				0	No t sig nif ica nt
b. No	2	1 2	4 4	2	5.9 91	0.1 63	9 2 2	
4. How do you usually travel to school?								
a. Walking	0	1	1				0	No t sig nif ica nt
b. Bicycle	0	3	9				7	
c. School bus	1	6	1	6	12. 59 2	3.6 38	2 6	
d. Public transport	1	2	7					
5. Have you ever witnessed or been involved in a road accident?								
a. Yes	0	3	9				0	No t sig nif ica nt
b. No	2	9	3	2	5.9 91	0.2 93	8 6 4	

The chi-square test showed no significant relationship between demographic factors (age, gender, prior knowledge of traffic rules, mode of transportation, and accident experience) and the children's post-intervention knowledge of traffic rules. All p-values

were above 0.05, indicating that these variables did not significantly impact the effectiveness of the video-assisted teaching.

DISCUSSION

In this study, the effectiveness of video-assisted teaching on children's knowledge regarding traffic rules was assessed using a pre-experimental one-group pre-test post-test design. The results showed a significant improvement in children's understanding of traffic rules, with the mean score rising from 5.57 (SD = 2.39) in the pre-test to 13.52 (SD = 1.40) in the post-test. This marked increase was supported by a high t-value of 23.74 ($p = 0.00001$), indicating that the intervention significantly enhanced children's awareness of road safety. This aligns with the growing recognition of video-assisted teaching as an effective educational tool, particularly in fostering practical understanding through visual and interactive methods. The findings of this study were consistent with similar research conducted by Usha Chakali, Ronur S. Ramesh, and Jeby Jose Olickal, who investigated the effectiveness of video-assisted teaching among college students in Puducherry. Although both studies used the pre-experimental research design and the same evaluation tools, there were key differences. The Puducherry study involved a larger sample of 355 college students, compared to the 60 children aged 6 to 10 years in the Pune study. Despite the difference in age groups and sample sizes, both studies demonstrated the effectiveness of video-assisted teaching in enhancing knowledge on traffic rules, reinforcing the importance of using visual aids to improve understanding of safety protocols.¹⁰

One significant observation from this study was the low baseline knowledge among children, as evidenced by the pre-test scores. The majority of the children had poor knowledge about traffic rules before the intervention, reflecting the gap in road safety education in the school curriculum. After the video-assisted session, however, the post-test scores indicated a substantial improvement, showing that children were able to retain and apply the information effectively.

Both this study and the study by Chakali et al. highlight the potential of video-assisted teaching in improving traffic safety knowledge. The positive outcomes emphasize the value of adopting innovative, engaging methods of education, particularly for young children, to address the growing concerns of road traffic accidents and promote safer road behaviour.

CONCLUSION

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This study employed a pre-experimental one-group pre-test post-test design to evaluate the effectiveness of video-assisted teaching on traffic rules among school children in Pune City. The pre-test results revealed poor baseline knowledge (Mean = 5.57, SD = 2.39), while the post-test showed significant improvement (Mean = 13.52, SD = 1.40). A highly significant t-value (23.74, $p = 0.00001$) confirmed the intervention's effectiveness in enhancing awareness of road signs, safety behaviors, and pedestrian conduct. Chi-square analysis indicated no significant association between demographic variables (age, gender, prior exposure, travel mode, accident history) and knowledge levels, suggesting the intervention was effective across groups. The findings highlight that structured, engaging tools like video-assisted teaching can substantially improve traffic safety knowledge and should be integrated into school-based safety education programs.

Conflict of Interest: The authors certify that they are involved in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

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