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A PRE-EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF ROAD SAFETY EDUCATION ON PERCEPTION OF ROAD SAFETY AMONG SCHOOL CHILDREN

Nursing

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ABSTRACT

Background: Road traffic accidents (RTAs) are a leading cause of injury and death among children, especially those aged 10–15 years, due to their limited physical and cognitive development. In 2019, India reported 11,168 child fatalities from RTAs—an 11.94% increase from the previous year. Globally, over 186,000 children die annually from RTAs, with those in low- and middle-income countries at triple the risk compared to high-income nations. Tamil Nadu alone saw a 41.7% rise in RTA deaths since 2019. School-based road safety education is a key strategy to improve children's awareness and reduce such preventable injuries. **Aims And Objectives:** This study aimed to: 1. Assess the pre-test and post-test level of perception of road hazards among school children. 2. Evaluate the effectiveness of road safety education in improving perception of road hazards. 3. Identify the association between post-test levels of perception and selected demographic variables. **Methodology:** A quantitative research approach with a pre-experimental one-group pre-test and post-test design was adopted. The study was conducted at Government Higher Secondary School, Thiruporur, among 55 school children aged 12–15 years, selected using purposive sampling. **Results:** In the pre-test, many students showed low to moderate awareness about road hazards. After the road safety education intervention: 35 students (70%) demonstrated adequate perception, 17 students (31%) had moderate perception, 3 students (5%) still needed improvement, A paired t-test showed a significant improvement in post-test scores compared to pre-test scores ($p < 0.05$), indicating the effectiveness of road safety education. **Conclusion:** The findings of this study suggest that road safety education significantly improves the perception of road hazards among school children aged 12 to 15 years. Implementing similar interventions can reduce the risk of road traffic injuries in this vulnerable population.

KEYWORDS

Road Safety, School Children, Road Traffic Accidents, Perception, Education Intervention

INTRODUCTION

Children are among the most vulnerable members of society, particularly when it comes to road traffic environments. Due to their ongoing physical, cognitive, and emotional development, children aged 10–15 are less equipped to recognize and respond to road hazards, making them highly susceptible to accidents. Their small stature, impulsive behavior, and limited understanding of traffic rules further increase this risk. According to the Global Status Report on Road Safety (2018), road traffic accidents remain a leading cause of death and disability among children worldwide. Early education is a key preventive strategy, and schools serve as an effective platform to instill essential road safety knowledge. This study aims to assess the effectiveness of structured road safety education in enhancing children's perception of road hazards and reducing accident-related risks.

Statement Of The Problem

A pre-experimental study to assess the effectiveness of road safety education on perception of road safety among school children

Objectives:

1. To assess the effectiveness of road safety education on the level of perception of road hazards among school children.
2. To associate the posttest level of perception of road hazards among school children with their selected demographic variables.

Hypothesis Null Hypothesis

Nh1: There is no significant effect of road safety education on level of perception of road hazards among school children.

Nh2: There is no significant association between the posttest level of perception of road hazards among school children with their selected demographic variables.

MATERIALS AND METHODS:

A quantitative research approach with a pre-experimental one-group pre-test and post-test design was used to assess the effectiveness of road safety education on the perception of road hazards among school children. The study was conducted at Government Higher Secondary School, Thiruporur, with 55 students aged 12 to 15 years selected through purposive sampling. After obtaining assent, demographic data such as age, gender, education, parental background, mode of transport, distance to school, vehicle ownership, street traffic levels, and bicycle usage were collected. A structured questionnaire with 30 questions on road safety was used for the pre-test, with each correct answer awarded one mark. A structured education session on road safety—including causes, risk factors, traffic rules, and preventive measures—was then delivered using visual aids and interactive methods. A post-test using the same tool was conducted on the 7th day to evaluate changes in perception. Scores were categorized as: <50% (Needs Improvement), 51–75% (Moderate Perception), and >75% (Adequate Perception), and the effectiveness of the intervention was determined by comparing pre- and post-test results.

Plan For Data Analysis:

The effectiveness of road safety education on the perception of road hazards among school children was analyzed using descriptive and inferential statistics. Descriptive statistics such as mean, standard deviation, and mean percentage were used to describe the demographic variables and summarize the level of perception. The paired t-test was used to evaluate the effectiveness of the educational intervention by comparing pre-test and post-test scores. The association between post-test perception scores and selected demographic variables was analyzed using the chi-square test.

RESULTS & DISCUSSION:

The study included 55 school children aged 12–15 years, with most participants aged between 12–13 years and a near-equal gender distribution. The majority used public or school transportation and lived within 2–5 km from school. In the pre-test, 12 (22%) students had inadequate perception, 41 (74%) had moderate perception, and only 2 (4%) showed adequate perception of road safety. After the structured educational intervention, the post-test revealed notable improvement: 35 (64%) had adequate perception, 17 (31%) had moderate perception, and only 3 (5%) remained with inadequate perception. The mean score increased from 14.24 (pre-test) to 20.11 (post-test), with a paired t-test value of 8.82 at a 0.05 level of significance, confirming the effectiveness of the road safety education. Additionally, a significant association was found between post-test perception levels and demographic variables such as the child's class and their mode of transportation to school, indicating that these factors influenced road safety awareness.

Assessment of perception regarding road hazards among school children is depicted in Table 1 and effectiveness of road safety

education on perception of road hazards among school children is depicted in Table 2.

Table 1: Assessment Of Perception Regarding Road Hazards Among School Children N=55

S.NO	LEVEL OF PERCEPTION	PRE-TEST		POST-TEST	
		n	%	n	%
1	Need to improve perception (0-15)	12	21	3	5
2	Moderate perception (16-22)	41	75	17	31
3	Adequate perception (23-30)	2	4	35	64

Table 2: Effectiveness Of Road Safety Education On Perception Of Road Hazards Among School Children N=55

Perception of road hazards	Mean	S.D	Paired 't' Value
Pre-test	14.24	4.24	t=8.82*
Post-test	20.11	16.02	

At 5 % Level of Significance P > 0.005

Association of post-test level of perception of road hazards among school children with their selected demographic variables.

The demographic variables, class of the child ($\chi^2 = 8.36$, df = 2) and mode of transportation ($\chi^2 = 13.48$, df = 6), showed a statistically significant association with the post-test level of perception regarding road hazards among school children.

A similar study conducted by Masilamani et al. (2022) evaluated the effectiveness of a peer-led education program on road safety knowledge and attitudes among adolescents in Vellore using a pre-experimental design. The pre-test mean knowledge score was 10.50, which increased to 17.52 in the post-test. The calculated paired t-value of –12.09 was highly significant ($p < 0.001$). The study also found that demographic variables such as age and parental literacy were significantly associated with post-test scores ($p < 0.05$), while other demographic variables did not show any significant association.

A similar pre-experimental study conducted by Ms. B. Byula Bavana et al. (2015) assessed the effectiveness of a structured teaching programme on road safety measures among primary school children in Guntur. In the pre-test, 54% of the children had inadequate knowledge, while 46% had adequate knowledge. Following the intervention, 100% of the children demonstrated adequate knowledge in the post-test. The improvement was statistically significant ($p < 0.05$). Among the socio-demographic variables analyzed, only religion and mother's education showed a significant association with post-test knowledge. Other variables—including class of the child and mode of transportation—did not show a significant association with post-test perception.

A similar pre-experimental study conducted by Ramtel et al. (2017) assessed the effectiveness of a self-instructional module on the prevention of road traffic accidents among school children. The pre-test mean knowledge score was 34.2% (SD ≈ 20.8), which significantly increased to 85.3% (SD ≈ 11.1) in the post-test ($t = 21.75$, $p < 0.05$). Additionally, demographic factors such as parents' education, type of family, distance from home to school, and mode of travel showed a statistically significant association with post-intervention scores (χ^2, $p < 0.05$).

A similar study conducted by Mathew (2014) in Bangalore evaluated the effectiveness of a structured teaching program on road safety among primary school children using a pre- and post-test design. In the experimental group, 98% of children had moderately adequate knowledge at the pre-test, while 2% had inadequate knowledge. Following the intervention, 96% of children demonstrated adequate knowledge in the post-test, with none remaining in the inadequate category. In the control group, 18% had inadequate knowledge at pre-test, which decreased to 4% at post-test. The structured teaching program showed a significant improvement in knowledge levels among the children.

CONCLUSION:

Road safety education was found to be effective in improving the perception of road safety among school children. The educational intervention enhanced children's awareness and understanding of various road hazards, safety signs, and responsible pedestrian and commuter behavior. The improvement in perception suggests that structured road safety education can play a significant role in promoting safer practices and reducing the risk of road traffic injuries among school-age children.

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