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### A study to assess the effectiveness of structured teaching program on knowledge regarding road safety rules and regulation among adolescents in selected school, Distt. Kangra, Himachal Pradesh

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#### Abstract

Road safety is a crucial aspect of public health and well-being particularly among the adolescents who are vulnerable to road accidents. Adolescent's tends to take risks such as speeding not wearing helmets or crossing roads carefully. Use of mobile phones, earphones and social media while walking or cylindrical leads to accidents. Young drivers, especially those without proper training are more prone for making errors. Friends may encourage risky behavior like over speeding or riding triple on the two wheelers. Methods: Pre-experimental one group pre-test and post-test design was used in the study. Total 60 students were selected in the study by using non-probability convenient sampling technique. The data was collected by self-structured questionnaire tool for the evaluation of knowledge level regarding road safety rules and regulation. Result: The result showed that the Pre-test score is 60.8% and post-test score is 71.6% respectively and mean difference of which is highly significant at  $p$  value  $<0.05$  which means the knowledge level of road safety rules and regulation was improved after implementation of structured teaching program. The findings of this study revealed that in pre-test, 3.3% having inadequate knowledge and 66.7% students having moderate knowledge and 30% having adequate knowledge regarding road safety rules and regulation. After teaching, 0% having inadequate knowledge, 36.7% having moderate knowledge, 63.3% students having adequate knowledge regarding road safety rules and regulation.

**Conclusion:** The study revealed that there was significant improvement in post-test knowledge which showed the effectiveness of structured teaching program. The improved knowledge among students will help to reduce the mortality rate and easy to prevent road accidents.

**Keywords:** Road safety rules and regulation, structured teaching programme, knowledge

#### Introduction

A roadside accidents, or road traffic accident [RTA] is an incident involving at least one moving vehicle on the public road resulting in injury or death. Road Traffic Accident is the large single cause of motivating and disability in adolescent.

According to WHO, road traffic injuries are one of the leading cause of death among young people globally. Many accidents occur due to the lack of awareness about road safety rules and regulations. According to the global status report on the road safety 2009, over 102 million people die each year on the roads worldwide, between 20 and 50 million suffer non-fatal injuries. Currently, RTA is the 9<sup>th</sup> leading cause of death and are predicted to became the 5<sup>th</sup> leading cause of death by the year 2020.

World Health Organization estimates that over 1.35 million people die annually as a result of road traffic accidents with the young people aged 15-29 years accounting for 54 of all road traffic facilities. In India the foundation for road safety rules and regulations was laid with the motor vehicles rules, 1998 and the rules of the road regulations 1989.

Road safety rules and regulations are essential for preventing accidents and ensuring the safety of all road users. The importance of road safety cannot be over stated as it affects not only drivers but also pedestrians cyclists and other vulnerable road users. Road safety rules and regulation help reduce the number of accidents on the road.

Many people are not aware about importance of road safety and the rules and regulation. Current educational programs may not be sufficiently effective in promoting road safety. There is a need for targeted educational programs that focus on specific issues such as pedestrian safety or drives behavior.

#### 1. Materials and methods

- Research Approach:** A quantitative research approach.
- Research Design:** Pre-experimental one group pre-test and post-test design was considered appropriate for this study.
- Research Settings:** A study was conducted at Govt. Sr. Sec. School Tiara Distt. Kangra (H.P.).

## Population

- **Target population:** The target population was students of 11<sup>th</sup> and 12<sup>th</sup> standards
- **Accessible Population:** Accessible population was students present during the time of the data collection.

## Sample and sampling technique

- **Sample:** The sample of the present study comprised of students at Govt. Senior Secondary School, Tiara.
- **Sample Size:** Sample for the present study consists of 60 students of the Govt. Senior Secondary School, Tiara.
- **Sample Technique:** Subjects were selected by using non-probability convenient technique.

## Sample Selection Criteria

### Inclusion Criteria

The subjects include:

- Students who were present at the time of the data collection.
- Students who were willing to participate.

### Exclusion criteria

The subjects exclude:

- Not willing to participate in this study.
- Not available at the time of data collection.
- Students who are sick.

## Research variables

- **Independent variable:** In this study, structured teaching program was independent variable.
- **Dependent variable:** In this study the knowledge of students was the dependent variable.
- **Selection and development of tool:** Self-structured knowledge questionnaire was used to assess the knowledge regarding road safety rules and regulation among adolescents.
- **Description of Tool:** The tool planned for data collection consists of two sections:

## Section A: Socio-Demographic Variables

This section consists of socio-demographic variables such as age, gender, class, residence, religion, type of family, mode of transport to school and pre-existing information regarding the road safety rules and regulation among adolescents.

## Section-B: Self-Structured Questionnaire

It consists of the structured knowledge questionnaire on various aspects of road safety rules and regulation such as general knowledge of road safety, importance of road safety, road safety statistics, causes, steps to be taken for preventing road accidents, how to prevent road accidents, road safety signs. It includes 30 questions.

The knowledge of students was measured in terms of knowledge score of multiple choice questions. Each question has 4 options. Correct answer carries 1 mark. Negative marking is not there.

## Criteria measure to assess the knowledge on road safety rules and regulation

- In structured questionnaire 30 items are regarding road

safety rules and regulation among adolescents.

- Maximum knowledge score =30
- Minimum knowledge score =0

## Level of knowledge score

Level of knowledge	Knowledge score
Inadequate knowledge	0-10
Moderate knowledge	11-20
Adequate knowledge	21-30

## Validity of tool

First draft to self-administered structured knowledge questionnaire on road safety rules and regulation was given to five experts of nursing field for content validity. Their suggestions were accepted and incorporated after consulting with guide. Finally tool was developed. After considering experts suggestion and in consultation with guide, the tool was modified and correction in the questions and their alternatives were made. The final tool consists of 8 socio-demographic variables in the Section-A and 30 knowledge questionnaires in Section-B.

## Reliability of tool

The reliability of the tool was analyzed by Cronbach's alpha method came out to be 0.9. Hence, it indicates the tool was reliable.

**Pilot Study:** Findings of pilot study revealed that it was feasible to conduct the main study and criteria measures were found to be reliable. The plan of data collection remained same for the final study because the investigator did not face any major problem in conducting the pilot study.

## Data collection procedure

- **Permission:** A formal written permission was obtained from the principal of Govt. Senior Secondary School, Tiara, District Kangra (H.P.) after discussing the purpose and objectives of the study with them.
- **Procedure:** Data collection for main study was carried out in the month of August, 2025 at Govt. Sen. Sec. School, Tiara on 60 students by using non-probability convenient sampling technique.

The level of knowledge among students was assessed by researcher through self-structured knowledge questionnaire after obtaining informed written consent. Section-A pertaining socio-demographic variables and Section-B is self-structured knowledge questionnaire. The time taken to conduct the test was 30 minutes for all students.

**Plan of analysis:** The data was collected organized and tabulated coding sheet was prepared for data analysis:

## Descriptive statistics

- Frequency and percentage distribution for socio-demographic variables.
- Mean and standard deviation was used to find out the difference between pre-test and post-test score of knowledge regarding road safety rules and regulations among adolescents.

### Inferential statistics

- Paired t-test was used to compare the pretest and posttest knowledge regarding road safety rules and regulations among adolescents.
- Non-parametric chi square test was used to find out the association between the pretest and posttest knowledge regarding road safety rules and regulations among adolescents with selected socio-demographic variables.

### Ethical Considerations

Permission for the research study was taken from ethical and research committee of Satyam College of Nursing, Lanjot.

- A formal written permission was taken from the Principal of Satyam College of Nursing, Lanjot.
- A formal permission was taken from the Principal of Abhishek Public Sr. Sec. School, Rait to conduct pilot study.
- A formal written permission was taken from the Principal of Govt. Sr. Sec. School, Tiara to conduct main research study.
- A written informed consent was obtained from the students.

- Privacy, confidentiality and anonymity of the students were maintained.

### Analysis and interpretation of data

Analysis and interpretation of data was done according to the objectives using descriptive and inferential statistics. The level of significance chosen was at  $p < 0.05$

### Organization of analyzed data

The analysed data was organized according to the objective and presented under the following sections:

- Section A:** Socio-Demographic Variables.
- Section B:** To assess the level of knowledge regarding road and safety rules and regulation among adolescents.
- Section C:** To evaluate the effectiveness of structured teaching program on knowledge regarding road safety rules and regulation among adolescents.
- Section D:** To find out the association between knowledge regarding road safety rules and regulation.

### Major findings

Section A: Frequency and percentage distribution of Socio-demographic variables

N=60				
Sr. No.	Variables	Personal profile of subjects	Percentage	Frequency
1.	Age in Years	14-15 Years	6.7%	4
		16-17 Years	93.3%	56
2.	Gender	Male	26.7%	16
		Female	73.3%	44
3.	Class	11 <sup>th</sup>	35.0%	21
		12 <sup>th</sup>	65.0%	39
4.	Residence	Urban	21.7%	13
		Rural	78.3%	47
5.	Religion	Hindu	100.0%	60
		Muslim	0.0%	0
		Sikhism	0.0%	0
		Christian	0.0%	0
6.	Type of Family	Nuclear	61.7%	37
		Joint	38.3%	23
7.	Mode of Transport to School	School Bus	6.7%	4
		Public Vehicle	53.3%	32
		Private Vehicle	40.0%	24
8.	Pre-existing Information	Yes	95.0%	57
		No	5.0%	3

Out of the 60 respondents, the majority 93.3% belonged to the 16-17 years age group, while only a small proportion 6.7% were in the 14-15 years category. This indicates that the study sample was predominantly composed of older adolescents. In terms of gender distribution, female students formed the majority 73.3%, while male students accounted for 26.7%. This shows a higher representation of females in the sample. With respect to educational class, 65.0% were studying in 12th standard, while 35.0% were in 11th standard. This demonstrates that the majority of participants were senior-level students. The data shows that a significant majority of respondents were from rural areas 78.3% while only 21.7% belonged to urban areas. Hence, rural students dominated the sample population. All the participants in the study 100% followed the Hindu religion. There were no respondents from other religions such as Muslim, Sikhism, or Christianity, making the religious composition entirely

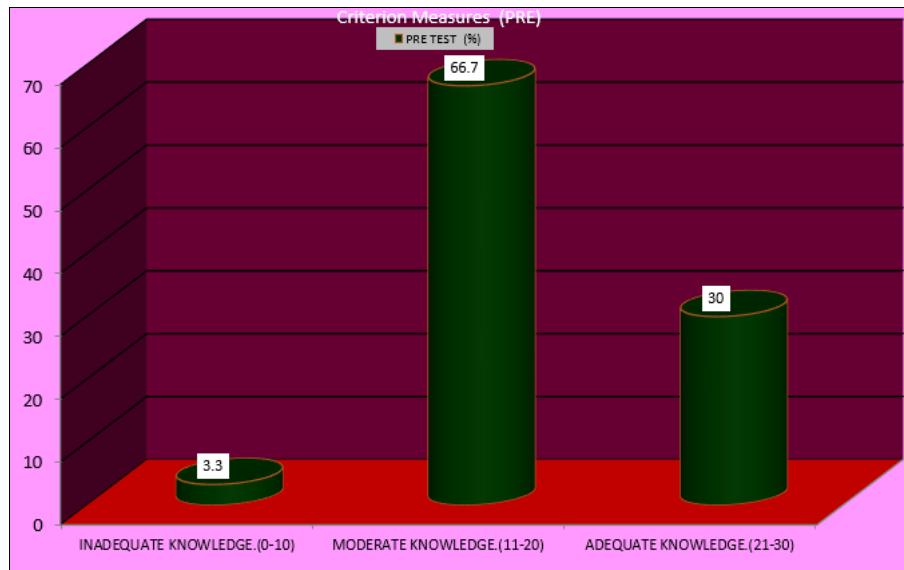
homogeneous. With regard to family type, 61.7% of respondents lived in nuclear families, whereas 38.3% belonged to joint families. Thus, nuclear families were more common among the students. For school transportation, 53.3% of students travelled by public vehicles, 40.0% used private vehicles, and only 6.7% used the school bus. This shows a clear reliance on public transport as the primary mode of commuting. A vast majority of the respondents, 95.0% reported having pre-existing information about the subject matter, while only 5.0% did not have any prior knowledge. This indicates that most students were already somewhat informed before the study.

**Section-B:** To assess the pre - test level of knowledge score regarding Road Safety Rules and Regulation among adolescents.

Based on this section of the study, the findings of pre-test

shows that 3.3% were having inadequate knowledge regarding road safety, 66.7% were having moderate

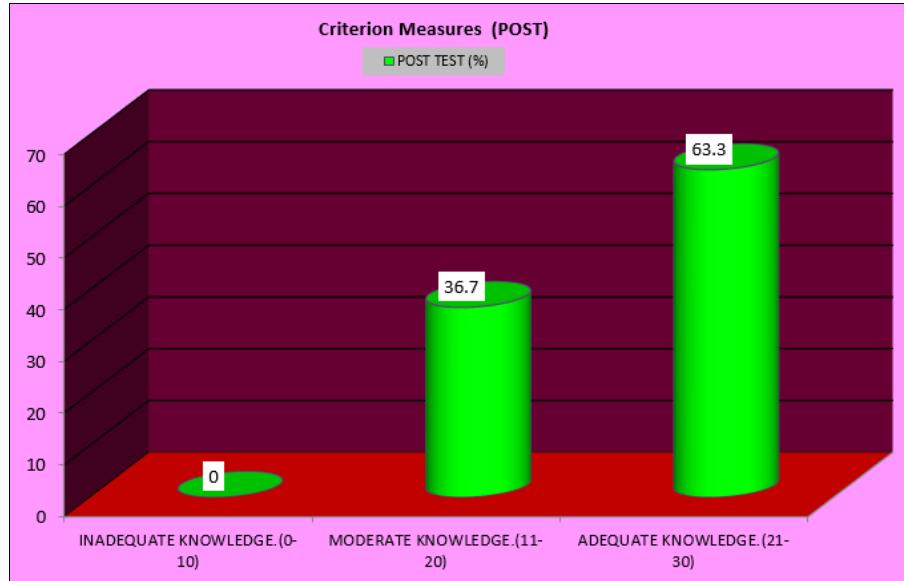
knowledge regarding road safety 30% were having adequate knowledge regarding road safety.



**Section C: To assess the post- test level of knowledge score regarding Road Safety Rules and Regulation among adolescents.**

Based on the objectives, the findings shows that 0% were

having inadequate knowledge regarding road safety, 36.7% were having moderate knowledge regarding road safety, 63.3% were having adequate knowledge regarding road safety.



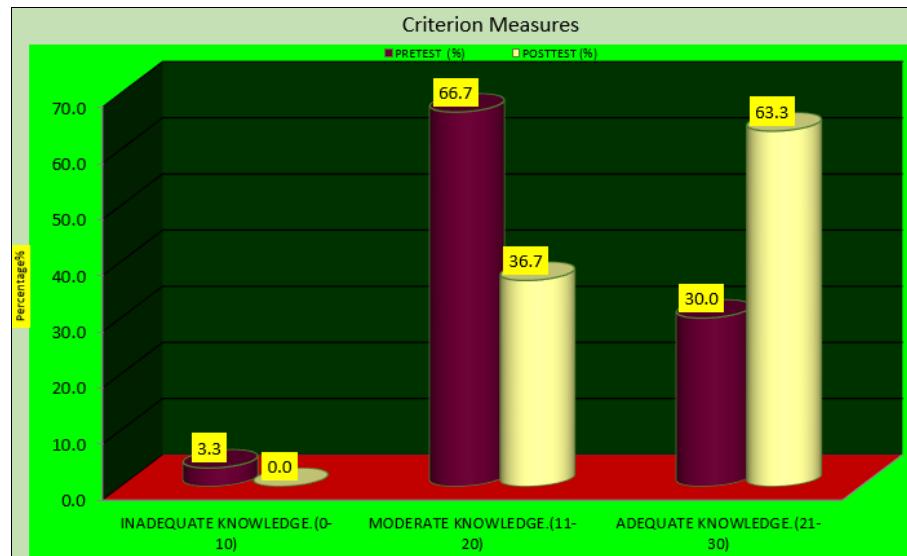
**Objective 3:** To compare the pre - test and post - test level of knowledge regarding Road safety and its prevention among adolescents.

In the present study the findings shows that there is difference between pre- test and post-test. In pre-test the findings shows that 3.3% were having inadequate knowledge, 66.7% were having moderate knowledge, 30% were having adequate knowledge.

**Objective 4:** To find out the association between the level of the knowledge with selected demographic variables regarding Road Safety and its prevention among adolescents.

In pre- test there is significance association between knowledge regarding road safety rules and regulations among adolescents with their socio-demographic variables. Whereas age, gender, class, residence, religion, type of family, socio-economic status, mode of transport to school, pre-existing information were no significance.

In post-test there is significance association between knowledge regarding road safety rules and regulations among adolescents with their socio-demographic variables. Whereas age, gender, class, residence, religion, type of family, socio-economic status, mode of transport to school, pre-existing information were no significance.



Association of pretest knowledge scores with selected socio-demographic variables.

Variables	Opts	ADEQUATE KNOWLEDGE	MODERATE KNOWLEDGE	INADEQUATE KNOWLEDGE	Chi Test	P Value	df	Table Value	Result
Age in Years	14-15 Years	1	2	1	6.250	0.044	2	5.991	Significant
	16-17 Years	17	38	1					
Gender	Male	3	13	0	2.344	0.310	2	5.991	Not Significant
	Female	15	27	2					
Class	11th	6	14	1	0.220	0.896	2	5.991	Not Significant
	12th	12	26	1					
Residence	Urban	3	10	0	1.080	0.583	2	5.991	Not Significant
	Rural	15	30	2					
Religion	Hindu	18	40	2	NA				
	Muslim	0	0	0					
	Sikhism	0	0	0					
	Christian	0	0	0					
Type of Family	Nuclear	10	25	2	1.539	0.463	2	5.991	Not Significant
	Joint	8	15	0					
Mode of Transport to School	School Bus	1	3	0	0.290	0.990	4	9.488	Not Significant
	Public Vehicle	10	21	1					
	Private Vehicle	7	16	1					
Pre-existing Information	Yes	17	39	1	9.064	0.011	2	5.991	Significant
	No	1	1	1					

**Limitation: The study was limited to**

- The sample size was only 60.
- The data collection period was limited to one month.

**Limitations of the study**

- The study may include only a small number of adolescents, which limits the ability to generalize the findings to a large population.
- The effectiveness of the structured teaching program is assessed over a short period, so long-term retention of knowledge and behavior change cannot be ensured.
- The study may be conducted in a single school, district, region which may not represent adolescents from different socioeconomic or cultural backgrounds.

**Recommendations:** Keeping in view of the present study findings, the following recommendation are offered for

further research:

- Periodic refresher sessions conduct regular refresher program to reinforce road safety knowledge and ensure long-term retention among adolescents.
- Incorporate practical demonstrations include practical demonstrations, interactive activities and role-playing sessions to help adolescents apply road safety rules in real-life situation.
- Parental and community involvement engage parents, teacher, community leaders in the road safety education program to strengthen the environment and promote consistent safety practices at home and in the community.
- Use of multimedia tools implements audiovisual aids such as videos animation, and interactive apps to make the structure teaching program more engaging and improve knowledge retention.

- Expansions of study population extend the program to include a large and more diverse population of adolescents from different school, regions, and socioeconomic background to improve generalizability of the result.

## Conclusion

The conclusion drawn from the study was that in pre - test, 3.3% having inadequate knowledge and 66.7% having moderate knowledge and 30% having adequate knowledge regarding road safety and its prevention. After teaching, 63.3% students having adequate knowledge regarding road safety. The study revealed that there was significant improvement in post - test knowledge which showed the effectiveness of structured teaching program. The improved knowledge among adolescents will help to reduce the mortality rate and easy to prevent accidents.

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