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# A Study to Evaluate the Effectiveness of a Structured Teaching Program on the Knowledge and Practice of Road Traffic Accident Prevention Measures Among Teenagers

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***Abstract***

*An investigation to evaluate the impact of a structured educational program on the understanding and implementation of strategies for preventing road traffic accidents among teenagers.* ***Introduction****: Accident is an accidental injury, passing or property harm happening in a grouping of occasions. Accidents don't simply occur; they are neglectfulness, indiscretion, carelessness, and flashing absence of focus. Accidents have turned into a significant reason for dismalness and mortality, particularly among the grown-ups and center. Bike crashes are found in kids underneath the age gathering of 12 years. Numerous sources indicate that adolescents are prone to injuries such as fractures, sprains, and severe wounds. During the school-age years, children cultivate a sense of accomplishment and acquire essential skills that are crucial for their functioning within society. Throughout their school years, coordination improves, and there is an increased sense of balance and rhythm, which allows for subconscious adherence to traffic rules and regulations. It is a research study aimed to evaluate the impact of a structured teaching program on the knowledge and practical application of strategies to prevent road traffic accidents among teenagers.* ***Settings and Design****: To ensure congruence with the nature of the issue and the study's goals, a quantitative research methodology was utilized. The researchers opted for a non-probability convenient sampling technique to select a sample size of 200 undergraduate students for the current investigation. Results: The findings indicated that prior to the intervention, the average knowledge score was 16.72 ± 1.90. However, following the implementation of the intervention, the average knowledge score significantly increased to 30.65 ± 4.86 in the post-test assessment. The calculated paired "t" value was –49.83 which was found to be statistically highly significant at "p" < 0.000 level. In pre-test the mean score of practice was 19.12 ± 1.90, whereas in the post-test the mean score of practice was 21.78 ± 3.76. The calculated paired "t" value was –64.74, which was found to be statistically highly significant at "p" < 0.000 level.* ***Conclusion****: The study results demonstrated that the utilization of the Structured Teaching Program effectively improved the knowledge and practice of teenagers.*

**Keywords:** Knowledge, practice, road-side accident, structure teaching program, signal, cycling, road safety.

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## INTRODUCTION

Accident is an accidental injury, passing or property harm happening in a grouping of occasions. Accidents don't simply occur; they are neglectfulness, indiscretion, carelessness, and flashing absence of focus [1]. Accidents (Road

 

Traffic Accident) have turned into a significant reason for dismalness and mortality, particularly among the grown-ups and center. Bike crashes are found in kids underneath the age gathering of 12 years [2]. Various sources indicate that young individuals are prone to accidents such as fractures, sprains, and other severe injuries. School-aged children develop a sense of productivity and acquire essential skills necessary for functioning in society. Throughout their school years, coordination improves, and they develop a sense of balance, allowing them to navigate traffic rules and regulations unconsciously [3, 4].

Therefore, it is crucial to educate, train, and familiarize individuals with traffic rules and accidents to reduce the occurrence of road traffic accidents and subsequently decrease the rates of injuries and fatalities. Improving road safety is a global imperative, necessitating effective strategies that encompass changes in road and transportation systems, vehicle safety measures, and individual behaviors of drivers, passengers, pedestrians, cyclists, and policymakers. Despite efforts, the worldwide number of road traffic fatalities remains unacceptably high, with approximately 1.24 million deaths annually [5–7]. These findings were derived from a spatial analysis of fatal and injury crashes conducted in Pennsylvania by Aguero-Valverde and Jovanis in 2006 [8].

Every year, a considerable portion of the population experiences injuries or disabilities due to traffic collisions, with vulnerable road users, including children, pedestrians, cyclists, and the elderly, being especially susceptible. This report acts as a comprehensive plan guiding the Decade of Action for Road Safety, covering the period from 2011 to 2020 [9].

Road Accident Statistics in North India states 1,37,000 individuals were killed in road accidents in 2013 alone, that is more than the quantity of individuals killed in the entirety of our conflicts set up [10]. In India, a fatality occurs every 15 minutes due to a road accident [11]. One genuine road accident in the nation happens each moment and 16 bite the dust on Indian roads consistently, 1,214 road crashes happen each day in India [12]. Bicycles account for 25% of all fatalities in road crashes. In the country, 20 children under the age of 14 die each day due to road accidents, resulting in a total of 377 deaths daily, which is equivalent to a large airplane crash occurring every day [13]. Tamil Nadu is the state with the most extreme number of road crash wounds. Top 10 Cities with the biggest number of Road Crash Deaths (Rank ± Wise) Chennai is the second city with the most extreme number of road crash wounds in all over India [14–15].

## STATEMENT OF PROBLEM

A research investigation was conducted in chosen colleges in Ludhiana, Punjab, India, with the aim of evaluating the impact of a structured teaching program on the knowledge and practice of teenagers concerning the prevention of road traffic accidents.

## OBJECTIVES

- To evaluate the impact of a structured teaching program on teenagers' knowledge about road traffic accident prevention.
- To assess the impact of a structured teaching program on teenagers' practice of road traffic accident prevention.
- To examine the relationship between teenagers' knowledge and practice of road traffic accident prevention.
- To explore the connection between teenagers' demographic variables and their level of knowledge and practice in preventing road traffic accidents.

## HYPOTHESIS

A tentative statement regarding the association between multiple variables, which can be tested and verified. It represents a specific and measurable prediction of the expected outcomes in a research study.

It consists of following:

 

**$H_1$:** There is a notable disparity between the average pre-test and post-test knowledge scores of teenagers in the experimental group concerning the prevention of road traffic accidents.

**$H_2$:** There is a notable distinction between the average pre-test and post-test practice scores of teenagers in the experimental group in relation to the prevention of road traffic accidents.

**$H_3$:** There is a significant correlation between teenagers' knowledge and their practical implementation of road traffic accident prevention measures.

**$H_4$:** There have significant association between knowledge and practice of teenagers of experimental group regarding prevention of road traffic accident with their selected sociodemographic variable sex, age, gender, habitat, and so forth.

## OPERATIONAL DEFINITIONS

### Effectiveness

It refers to gain the knowledge as determined by significant difference in experimental group knowledge and practice score of teenagers regarding prevention of road traffic accidents.

### Structured Teaching Program

It pertains to a well-structured teaching strategy and materials developed by the researcher, validated by experts, and aimed at educating students about road safety. The objective is to provide comprehensive information on how to prevent the road traffic accidents among teenagers.

### Knowledge

It pertains to the comprehension and consciousness regarding the avoidance of road traffic accidents.

### Practice

It refers to the learning and acquiring experience to bring about positive changes in the teenagers towards the road traffic rules and regulation, like putting a seatbelt, wearing helmet, and so on.

### Prevention

It refers to the act of controlling road traffic accidents before occurring.

### Road Traffic Accidents

It is referred to as a road accident, which occurs between two or more entities, where at least one of them is a moving vehicle.

### Teenagers

It pertains to individuals who fall within the age range of 13 to 19 years, commonly referred to as students**.**

## DELIMITATIONS

- The students within the age range of 16 to 19 years.
- The students who were not present during the study are excluded.
- The students who are medically unfit to drive.

## MATERIAL AND METHODS

### Research Design

Pre-experimental one group, pre-test, and post-test.

### Research Setting

A total of 50 teenager students were selected from the Bhutta College of Education and 70 teenager's students from the Arya College in Ludhiana. The study was conducted at the Anand Institute in Ludhiana, and a sample of 80 teenage students who met the study criteria was selected.

 

**Target Population**

The study included participants who met the inclusion criteria and were enrolled in +1, +2, and undergraduate courses. The participants were specifically chosen from selected colleges in Ludhiana.

**Sample and Sampling Technique**

***Sample Size***

Study samples were 200 teenager students selected from selected colleges of Ludhiana, Punjab

***Sampling Technique***

Convenience sampling technique were used to collect the data.

**Inclusion Criteria**

The study included the teenagers who were:

- Willing to participate and age between 16 years to 19 years.
- Present at the time of data collection.
- Medically fit to drive.

**Exclusion Criteria**

The study excluded the teenagers who were:

- Age group below 16 years.
- Not willing to participate.
- Medically unfit to drive.
- Absent at the time of data collection.

This schematic representation of research design is given in Figure 1.

**ANALYSIS AND INTERPRETATION**

Table 1 depicts the frequency and percentage distribution of teenagers according to their selected demographic variables.

**Table 1.** Frequency and percentage distribution of teenagers according to their selected demographic variables (N = 200).

| **Demographic variables** | **F** | **%** |
|---|---|---|
| *Age in years* | | |
| 16 | 08 | 4 |
| 17 | 40 | 20 |
| 18 | 88 | 44 |
| 19 | 64 | 32 |
| *Sex* | | |
| Male | 88 | 44 |
| Female | 112 | 56 |
| *Educational qualification* | | |
| +1 | 16 | 8 |
| +2 | 16 | 8 |
| BA 1st year | 48 | 24 |
| BA 2nd year | 120 | 60 |
| *Mother education* | | |
| Illiterate | 0 | 0 |
| Primary | 16 | 8 |
| Matric | 112 | 56 |

 

| | | |
|---|---|---|
| Under graduate | 56 | 28 |
| Graduate | 16 | 8 |
| *Father education* | | |
| Illiterate | 8 | 4 |
| Primary | 40 | 20 |
| Matric | 40 | 20 |
| Under graduate | 80 | 40 |
| Graduate | 32 | 16 |
| *Mother occupation* | | |
| House wife | 104 | 52 |
| Business woman | 48 | 24 |
| Private employee | 48 | 24 |
| Government employee | 0 | 0 |
| *Father occupation* | | |
| Farmer | 48 | 24 |
| Businessman | 72 | 36 |
| Private employee | 40 | 20 |
| Government employee | 40 | 20 |
| *Family type* | | |
| Joint | 88 | 44 |
| Nuclear | 104 | 52 |
| Extended | 08 | 4 |
| *Residence* | | |
| In the campus | 32 | 16 |
| Out of the campus | 168 | 84 |
| *Family income* | | |
| >10,000 | 16 | 8 |
| 10,001 to 15,000 | 40 | 20 |
| 15,001 to 25,000 | 72 | 36 |
| Above 25,001 | 72 | 36 |
| *Habitat* | | |
| Rural | 96 | 48 |
| Urban | 104 | 52 |
| *Dietary habit* | | |
| Vegetarian | 112 | 56 |
| Non-vegetarian | 88 | 44 |
| *Source of information* | | |
| Parents | 0 | 2 |
| Teachers | 48 | 24 |
| Peer groups | 80 | 40 |
| Mass media | 56 | 28 |
| Traffic police | 16 | 8 |
| *Mode of travelling* | | |
| Pedestrian | 12 | 6 |
| College transport | 72 | 36 |
| Public transport | 52 | 26 |
| Private transport | 64 | 32 |

 

**Objective 1: To Assess the Effectiveness of Structure Teaching Program on Knowledge Regarding Prevention of Road Traffic Accidents among Teenagers**

Table 2 and Figure 2 showing Frequency and percentage distribution of knowledge of pre-test and post-test.

**Table 2.** Frequency and percentage distribution of knowledge of pre-test and post-test (N = 200).

| Level of knowledge | Knowledge score | Pre-test | | Post-test | |
|---|---|---|---|---|---|
| | | *F* | *%* | *F* | *%* |
| Poor | 1–13 (Poor) | 7 | 3.5 | 0 | 0 |
| Average | 14–27(Average) | 193 | 96.5 | 24 | 12 |
| Good | 28–40 (Good) | 0 | 0 | 176 | 89.5 |

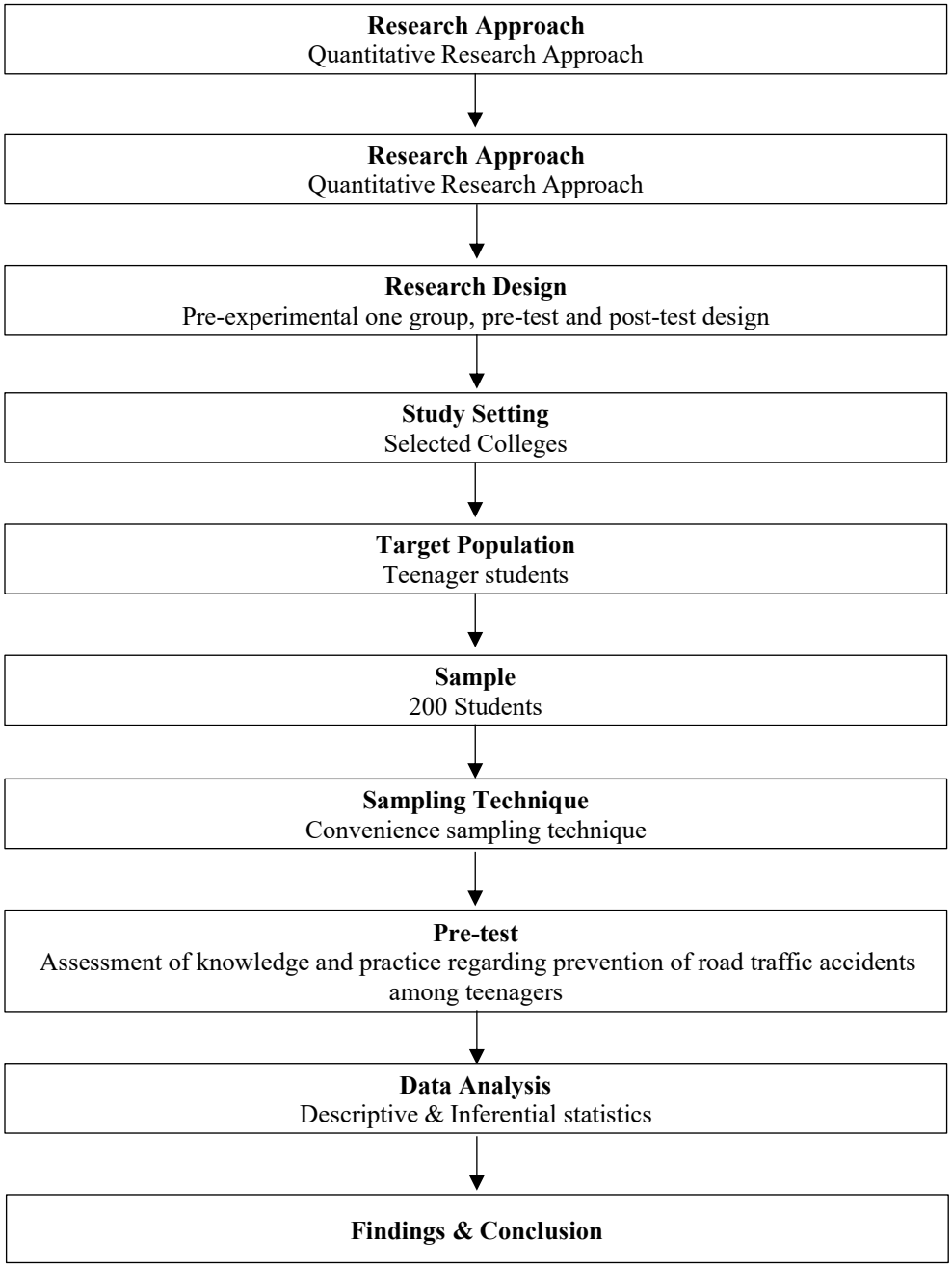


**Figure 1.** Schematic representation of research methodology.

 

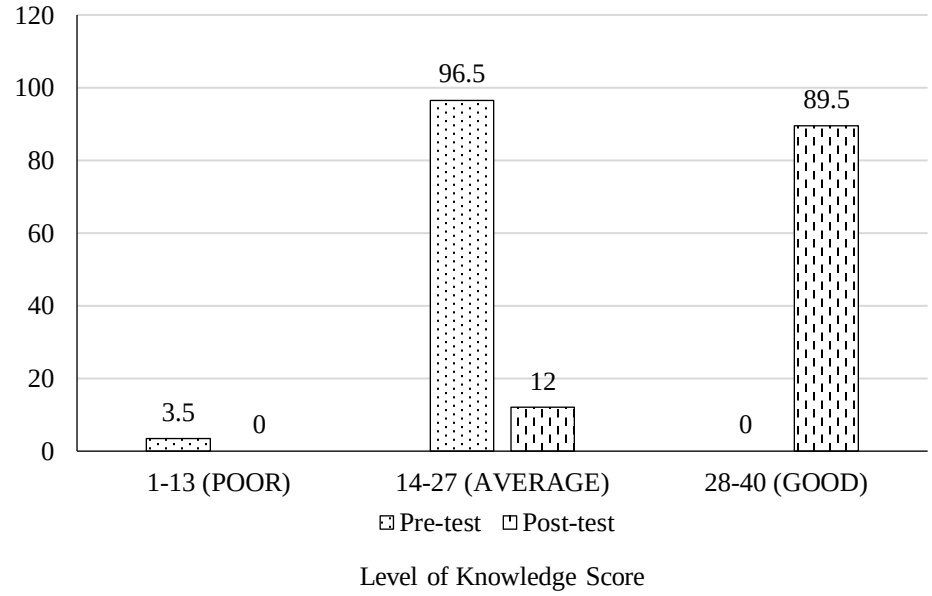


**Figure 2.** Percentage distribution of knowledge of pre-test and post-test.

**Objective 2: To Assess the Effectiveness of Structure Teaching Program on Practice Regarding Prevention of Road Traffic Accidents Among Teenagers**

Table 3 and Figure 3 showing Frequency and percentage distribution of practice of pre-test and post-test.

**Table 3.** Frequency and percentage distribution of practice of pre-test and post-test (N = 200).

| Level of practice | Practice score (%) | Pre-test | | Post-test | |
|---|---|---|---|---|---|
| | | *F* | *%* | *F* | *%* |
| Poor | >35% (0–13) | 0 | 0 | 0 | 0 |
| Average | 35%–75% (14–26) | 165 | 82.5 | 200 | 100 |
| | <75% (27–40) | 35 | 18.5 | 0 | 0 |

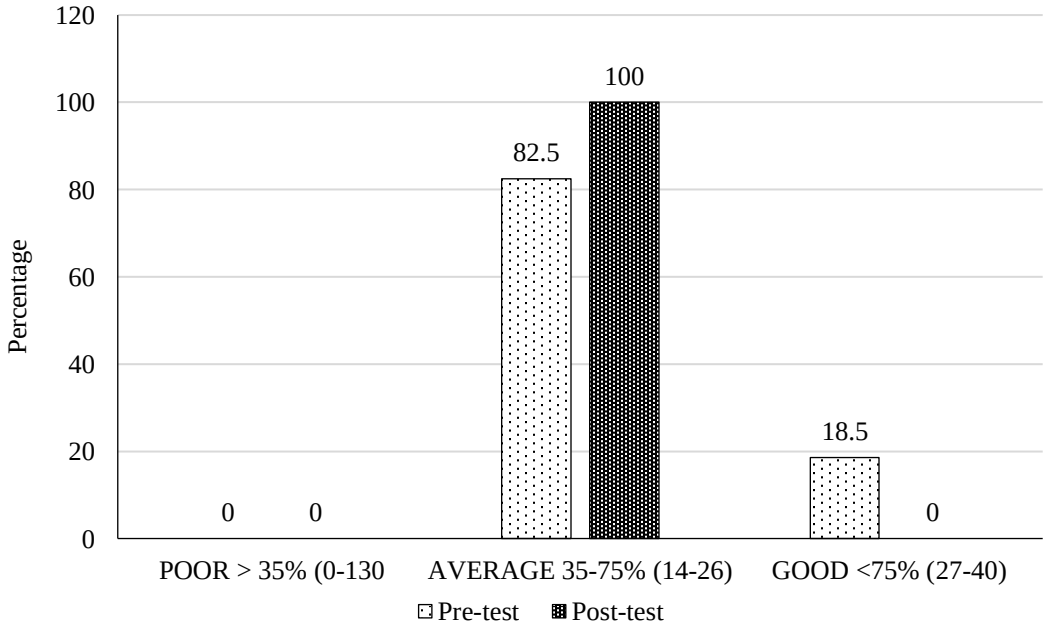


**Figure 3.** Percentage distribution of practice of pre-test and post-test.

 

**Objective 3: To Find Out the Correlation Between the Knowledge and Practice Regarding Prevention of Road Traffic Accidents**

Table 4 and Figure 4 showing the correlation between knowledge and practice scores regarding prevention of road traffic.

**Table 4.** Correlation between knowledge and practice scores regarding prevention of road traffic (N = 200).

| Variables | Mean | SD | "r" value | "p" value |
|---|---|---|---|---|
| Knowledge | 6.50 | 2.243 | r = 0.425 | p = 0.000 |
| Practice | 24.28 | 5.324 | | |

***p < 0.001 (highly significant)

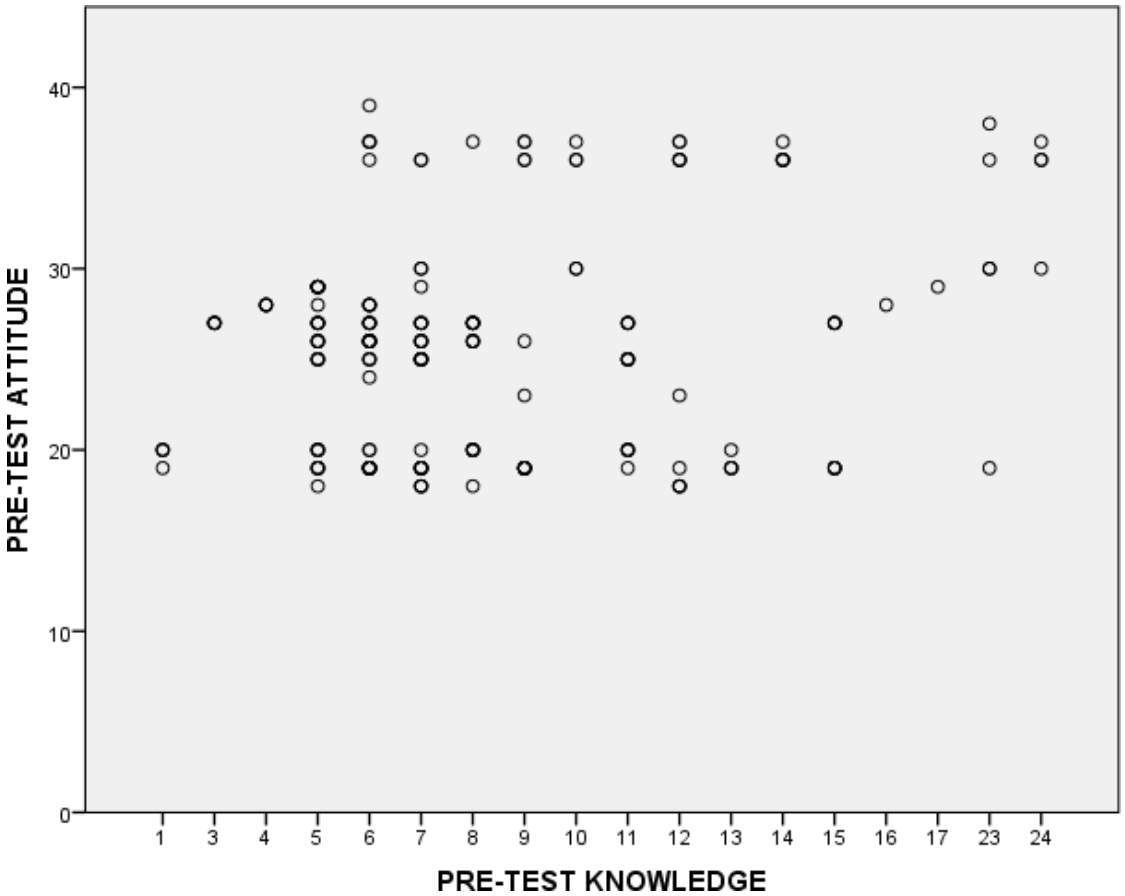


**Figure 4.** Test of significance of correlation between knowledge and practice score.

**Objective 4: To Associate the Level of Knowledge and Practice Regarding Prevention of Road Traffic Accidents with Selected Sociodemographic Variables**

Table 5 depicts that there was non- significant association between knowledge score and the selected demographic variables, that is, age ($\chi^2 = 11.09$), sex ($\chi^2 = 5.69$), educational qualification ($\chi^2 = 5.18$), education of mother ($\chi^2 = 9.91$), occupation of father ($\chi^2 = 8.85$), family type ($\chi^2 = 6.66$), residence ($\chi^2 = 2.31$), habitat ($\chi^2 = 8.14$), dietary habit ($\chi^2 = 5.69$), and source of information ($\chi^2 = 10.99$). at "p" > 0.05 level.

A statistically significant relationship was found between the knowledge score and certain demographic variables, namely, the father's education, mother's occupation, family income, and mode of traveling. The chi-square values were 38.07, 22.96, 13.37, and 13.41, respectively, with a significance level of $p < 0.05$.

 

**Table 5.** Association of levels of knowledge with selected sociodemographic variables (N = 200).

| Demographic variables | Level of knowledge | | | Association with knowledge score | |
|---|---|---|---|---|---|
| | ***Poor knowledge*** | ***Average knowledge*** | ***Good knowledge*** | ***df*** | ***Chi-square*** |
| *Age in years* | | | | | |
| 16 Years | 0 | 8 | 0 | 6 | 11.09 |
| 17 Years | 0 | 40 | 0 | | |
| 18 Years | 0 | 88 | 0 | | |
| 19 Years | 7 | 57 | 0 | | |
| *Sex* | | | | | |
| Male | 0 | 88 | 0 | 2 | 5.69 |
| Female | 7 | 105 | 0 | | |
| *Educational qualification* | | | | | |
| +1 | 0 | 16 | 0 | 6 | 5.18 |
| +2 | 0 | 16 | 0 | | |
| BA 1st year | 0 | 48 | 0 | | |
| BA 2nd year | 7 | 113 | 0 | | |
| *Education of mother* | | | | | |
| Illiterate | 0 | 0 | 0 | 8 | 9.91 |
| Primary | 0 | 16 | 0 | | |
| Matric | 0 | 112 | **0** | | |
| Undergraduate | 0 | 56 | 0 | | |
| Graduate | 7 | 9 | 0 | | |
| *Father education* | | | | | |
| Illiterate | 0 | 0 | 0 | 8 | 38.07 |
| Primary | 0 | 40 | 0 | | |
| Matric | 0 | 40 | **0** | | |
| Undergraduate | 0 | 80 | 0 | | |
| Graduate | 7 | 25 | 0 | | |
| *Mother occupation* | | | | 4 | 22.96 |
| Housewife | 0 | 104 | 0 | | |
| Business woman | 0 | 48 | 0 | | |
| Private employee | 7 | 41 | 0 | | |
| Govt. employee | 0 | 0 | 0 | | |
| *Father occupation* | | | | | |
| Farmer | 0 | 48 | 0 | 6 | 8.85 |
| Business man | 0 | 72 | 0 | | |
| Private employee | 7 | 40 | 0 | | |
| Govt. employee | 0 | 33 | 0 | | |
| *Family type* | | | | | |
| Joint | 0 | 88 | 0 | 4 | 6.66 |
| Nuclear | 0 | 97 | 7 | | |
| Extended | 0 | 8 | 0 | | |
| *Residence* | | | | | |
| In the campus | 0 | 32 | 0 | 4 | 2.31 |
| Out of the campus | 7 | 161 | 0 | | |
| *Family income* | | | | | |
| <10,000 | 0 | 16 | 0 | 6 | 13.7 |
| 10,001-15,000 | 0 | 40 | 0 | | |

 

| | | | | | |
|---|---|---|---|---|---|
| 15,001-25,000 | 0 | 72 | 0 | | |
| Above 25,001 | 7 | 65 | 0 | | |
| *Habitat* | | | | | |
| Rural | 7 | 89 | 7 | 4 | 8.14 |
| Urban | 0 | 104 | 0 | | |
| *Dietary habit* | | | | | |
| Vegetarian | 7 | 105 | 0 | 2 | 5.69 |
| Non-vegetarian | 0 | 88 | 0 | | |
| *Source of information* | | | | | |
| Parents | 0 | 0 | 0 | 8 | 10.99 |
| Teacher | 0 | 48 | 0 | | |
| Peer groups | 7 | 73 | 0 | | |
| Mass media | 0 | 56 | 0 | | |
| Traffic police | 0 | 16 | 0 | | |
| *Mode of travelling* | | | | | |
| Pedestrian | 0 | 12 | 0 | 6 | 13.41 |
| College transport | 7 | 65 | 0 | | |
| Public transport | 0 | 52 | 0 | | |
| Private transport | 0 | 64 | 0 | | |

Table 6 depicts that there was non-significant association between practice score and the selected demographic variables, that is, age ($\chi^2 = 2.24$), sex ($\chi^2 = 1.24$), educational qualification ($\chi^2 = 0.6$), education of mother ($\chi^2 = 3.11$), father education ($\chi^2 = 9.35$), occupation of father ($\chi^2 = 0.6$), family type ($\chi^2 = 2.35$), residence ($\chi^2 = 0.78$), family income ($\chi^2 = 1.15$), habitat ($\chi^2 = 4.56$), dietary habit ($\chi^2 = 0.79$), and source of information ($\chi^2 = 2.73$) at "p" > 0.05 level.

A significant correlation was observed between the practice score and certain demographic variables, specifically the mother's occupation and mode of traveling. The chi-square values were 3.74 and 3.39, respectively, with a significance level of $p < 0.05$.

**Table 6.** Association of levels of practice with selected socio demographic variables (N = 200).

| **Demographic variables** | **Level of practice** | | | **Association with practice score** | |
|---|---|---|---|---|---|
| | ***Poor practice*** | ***Average practice*** | ***Good practice*** | ***df*** | ***Chi-square*** |
| *Age in years* | | | | 6 | 2.24 |
| 16 Years | 0 | 7 | 1 | | |
| 17 Years | 0 | 32 | 8 | | |
| 18 Years | 0 | 76 | 12 | | |
| 19 Years | 0 | 51 | 13 | | |
| *Sex* | | | | | |
| Male | 0 | 76 | 0 | 2 | 1.24 |
| Female | 0 | 90 | 0 | | |
| *Educational qualification* | | | | | |
| +1 | 0 | 13 | 3 | 6 | 0.6 |
| +2 | 0 | 13 | 3 | | |
| BA 1st year | 0 | 38 | 10 | | |
| BA 2nd year | 0 | 102 | 20 | | |
| *Education of mother* | | | | | |
| Illiterate | 0 | 0 | 0 | 8 | 3.11 |

 

| | | | | | |
|---|---|---|---|---|---|
| Primary | 0 | 13 | 3 | | |
| Matric | 0 | 93 | 19 | | |
| Undergraduate | 0 | 49 | 7 | | |
| Graduate | 0 | 11 | 5 | | |
| *Father education* | | | | | |
| Illiterate | 0 | 6 | 2 | | |
| Primary | 0 | 30 | 10 | | |
| Matric | 0 | 34 | 6 | | 9.35 |
| Undergraduate | 0 | 70 | 10 | | |
| Graduate | 0 | 26 | 6 | | |
| *Mother occupation* | | | | | |
| Housewife | 0 | 91 | 13 | | |
| Business woman | 0 | 36 | 12 | 4 | 3.74 |
| Private employee | 0 | 39 | 9 | | |
| Govt. employee | 0 | 0 | 0 | | |
| *Father occupation* | | | | | |
| Farmer | 0 | 41 | 7 | | |
| Business man | 0 | 61 | 11 | 6 | 0.6 |
| Private employee | 0 | 32 | 8 | | |
| Govt. employee | 0 | 32 | 8 | | |
| *Family type* | | | | | |
| Joint | 0 | 77 | 11 | | |
| Nuclear | 0 | 83 | 21 | 4 | 2.35 |
| Extended | 0 | 6 | 2 | | |
| *Residence* | | | | | |
| In the campus | 0 | 25 | 7 | 4 | 0.78 |
| Out of the campus | 0 | 141 | 27 | | |
| *Family income* | | | | | |
| <10,000 | 0 | 13 | 3 | | |
| 10,001-15,000 | 0 | 31 | 9 | 6 | 1.15 |
| 15,001-25,000 | 0 | 61 | 11 | | |
| Above 25,001 | 0 | 61 | 11 | | |
| *Habitat* | | | | | |
| Rural | 0 | 74 | 22 | 4 | 4.56 |
| Urban | 0 | 92 | 12 | | |
| *Dietary habit* | | | | | |
| Vegetarian | 0 | 91 | 21 | 2 | 0.79 |
| Non vegetarian | 0 | 65 | 13 | | |
| *Source of information* | | | | | |
| Parents | 0 | 0 | 0 | | |
| Teacher | 0 | 39 | 0 | | |
| Peer groups | 0 | 65 | 0 | 8 | 2.73 |
| Mass media | 0 | 50 | 0 | | |
| Traffic police | 0 | 12 | 0 | | |
| *Mode of travelling* | | | | | |
| Pedestrian | 0 | 8 | 4 | | |
| College transport | 7 | 58 | 14 | 6 | 3.39 |
| Public transport | 0 | 45 | 7 | | |
| Private transport | 0 | 55 | 9 | | |

 

## CONCLUSION

### Based on the Findings, the Following Conclusions Can be Drawn

The study revealed that there was a significant improvement in knowledge scores after the structured teaching program, with the average score increasing from 193 in the pre-test to 176 in the post-test. Similarly, in terms of practice, there was an average score of 200 in the pre-test and 165 in the post-test. These differences indicate a significant gain in knowledge and practice through the structured teaching program, supporting the acceptance of the hypothesis. Furthermore, the study found significant associations between knowledge and certain social demographic variables, specifically mother's occupation, father's education, family income, and mode of traveling.

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