



**ORIGINAL RESEARCH PAPER**

**Nursing**

**ASSESSMENT OF EFFECT OF A MULTIMEDIA ASSISTED TEACHING PROGRAMME OVER TRADITIONAL TEACHING METHOD ON PREVENTION OF ROAD TRAFFIC ACCIDENTS AMONG THE STUDENTS IN A SECONDARY SCHOOL OF WEST BENGAL**

**KEY WORDS:** Experimental Study, Multimedia Assisted Teaching, Road Traffic Accidents, Traditional Teaching

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**ABSTRACT**

**Introduction:** Multimedia assisted teaching and traditional methods of teaching are predominantly applied in teaching-learning sessions in institutions. These methods may be practised both in the general and the technical education.  
**Objectives:** To assess and compare the knowledge on prevention of road traffic accident of two teaching methods.  
**Materials and methods:** Two groups (50 students in each) were selected for two kinds of teaching-learning methods. It was passed through pre-test and post-test design with non probability sampling technique.  
**Results:** The parents, news paper were good source of information for knowledge on road traffic accident. Both the teaching methods were found helpful in increase of knowledge on prevention of road traffic accident. The mean difference of mean post-test knowledge score of both groups was found significantly [t98 = 2, p< 0.05] effective that multimedia assisted teaching programme over traditional teaching method was superior.  
**Conclusion:** Multimedia assisted teaching is superior to traditional teaching.

**HYPOTHESIS:**

The mean post- test knowledge score of the students receiving multimedia assisted teaching is different from mean post-test knowledge score of the students receiving traditional teaching at .05 level of significance.

**INTRODUCTION:**

Road Traffic Accident (RTA) is a present day health problem. This is not taken as important as other communicable or non-communicable disease. This can be a candidate of prevention. RTA can be taught in the general school in order to prevent the accidents. Mode of teaching-learning may be different and their learning impact also will be different. An experimental study was undertaken to evaluate the effect of multimedia assisted teaching versus traditional method of teaching in terms of knowledge on prevention of road traffic accident among class VII students in two separate secondary schools under West Bengal Board of Secondary Education. This experimental non randomized study was based on Leedwig Von Bertalanfy model.<sup>1</sup>

Magnitude of the problem: Road accidents are a human tragedy which involves high human suffering. They impose a huge socio economic cost in terms of untimely deaths, injuries and loss of potential income. Its negative impact is felt not only on individuals, their health & welfare, but also on the economy. Consequently, road safety has become an issue of national concern.<sup>2</sup> The African region continues to have the highest road traffic death rates. The lowest rates are in the European region notably among the region's high-income countries, many of which have been very successful at achieving and sustaining reductions in death rates despite rising motorization. Road traffic death rates in low and middle income countries are more than double those in high income countries.<sup>3</sup> Road traffic injuries are the 8<sup>th</sup> leading cause of death in India and the 9<sup>th</sup> leading cause of overall health loss. Road traffic injuries impose a public health burden that exceeds that of many infectious diseases (e.g. malaria) and non communicable diseases (e.g. diabetes) that are acknowledged to be important health issues for the country like India. The net health loss from road traffic injuries in India is approximately three times that from maternal disorders.<sup>4</sup> So in real sense the scenario of road traffic accident throughout the world is dangerous. All the age group are vulnerable but between 15 to 44 years male are much more prone to face road traffic accident. These road traffic accidents are very distressing and disheartening not only for an individual, family but

also for the society and nation. Repeated incidences of road traffic accident with high rate of mortality and morbidity is a public health burden for a nation. This burden only could be minimised by executing the preventive measure.<sup>5</sup>

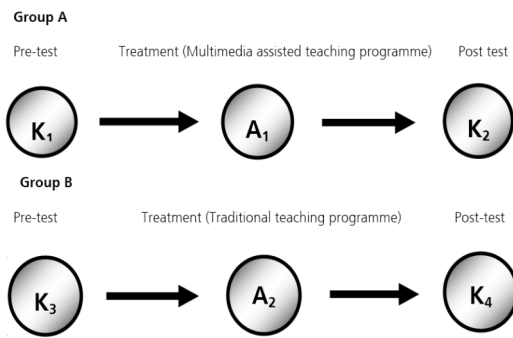
Rationale of the study: In the present scenario road traffic accident is a burning issue as a non communicable health problem. Since the child hood/school life, the teaching on 'the preventive measures of road traffic accident' will be definitely helpful for the reduction of morbidity & mortality due to RTA. The method among the multimedia assisted and the traditional method of teaching whichever is effective for the school education that can be used for the group. The study will be helpful not only to enhance the knowledge of an individual on traffic rules and the strategy to prevent the road traffic accident but also to identify the effective method of teaching for the school students on prevention of road traffic accidents. Objectives: The study has been conducted to assess the knowledge on prevention of road traffic accident through administration of multimedia assisted teaching and traditional teaching method and to compare the effect of multimedia assisted teaching programme versus traditional teaching.

**MATERIALS AND METHODS:**

**Type of study:** This is an Experimental study. Place of study: The study has been conducted at Kalyani University Experimental High School, Kalyani, Nadia and Kalyani Shikshayatan High School, Kalyani, Nadia of West Bengal. Period of study: The study was conducted during July, 2016 to June, 2017. Sample size: Total 100 students (50 students in one school for the intervention with multimedia assisted teaching method and 50 students in another school for the study with traditional method of teaching) were the size of sample. Sampling technique: Non-probability, convenient sampling technique was used to select the students. Variables under the study: Independent variables were traditional teaching method and multimedia assisted teaching programmes, source of knowledge. Dependent variable was knowledge among secondary school students regarding prevention of road traffic accident. Demographic variables were age and sex of the respondent, educational and occupational qualification of parents, socio-economic status etc.

The study was conducted in two separate Bengali medium secondary schools of West Bengal and these schools were co-education institute.

**The symbolic presentation of research study**



**Keys:**

- K1** Assessment of knowledge level on prevention of road traffic accident among class VII students of Kalyani University Experimental High School, Kalyani, Nadia before administration of multimedia assisted teaching programme
- A1** Administration of multimedia assisted teaching programme on class VII students on prevention of road traffic accident
- K2** Assessment of knowledge level on prevention of road traffic accident among class VII students after administration of multimedia assisted planned teaching programme
- K3** Assessment of knowledge level on prevention of road traffic accident among class VII students of Kalyani Shikhayatan High School, Kalyani, Nadia of West Bengal before administration of traditional teaching programme
- A2** Administration of traditional teaching programme on class VII students on prevention of road traffic accident
- K4** Assessment of knowledge level on prevention of road traffic accident among class VII students after administration of traditional teaching programme

**The sample was the class VII students of the selected schools.**

**Inclusion criteria:** Students who are studying in class VII of the selected schools, who are willing to participate in the study and who are available at the time of study, were included in the study. **Exclusion criteria:** Students who are not willing to participate in the study, who are not available during the period of data collection were automatically excluded. The students who fell sick during learning session have been excluded.

Paper pencil method was used as a data collection method. Three types of tool used to collect data. The questionnaire were pre-designed, pre-tested and semi-structured schedules for the data collection related to demographic characteristic and general information and structured as well as pictorial schedules were used for data collection on knowledge regarding prevention of road traffic accident.

**STATISTICAL ANALYSIS:** After collection of the data the statistical analysis has been done applying t test and Chi-square Test. T test was being used to analyse the data collected before and after intervention with multimedia as well as traditional method of teaching. The Chi-square test was used to analyse the collected demographic data to find out the association between demographic data with the pre-test knowledge score of both the group.

**RESULT:**

Total 100 students (50 in experimental group and 50 in traditional group) were taken in the study. Both male and female children were given the training for prevention of Road Traffic Accidents. They were from a rural town and nearby rural areas. Educational factors, economic issues of parents were also observed (Table 1). Most of the students were found from poor economic status.

**TABLE 1: Distribution of participants according to Bio-social factors (A = 50, B = 50)**

Group	Characters	
	Age	
	12 - ≤ 13 yrs	13 - 14 yrs
A	43 (86%)	7 (14%)
B	40 (80%)	10 (20%)
	Sex	
	Male	Female
A	25 (50%)	25 (50%)
B	28 (56%)	22 (44%)
	Fathers Education	
	> Primary	≤ Primary
A	49 (98%)	1 (2%)
B	47 (94%)	3 (6%)
	Mothers education	
	> Primary	≤ Primary
A	49 (98%)	1 (2%)
B	40 (80%)	10 (20%)
	Both parents*	
	> Primary	≤ Primary
A	49 (98%)	1 (2%)
B	38 (76%)	12 (24%)
	Economic status	
	Above Poverty Line	Below Poverty Line
A	8 (16%)	42 (84%)
B	10 (20%)	40 (80%)

**Note:** A = 50, B = 50; \*In group A both the mother and father of one student was from lower educational status; In group B, similar finding was found in one student.

A few of the students of both the groups heard the term RTA from their parents, neighbours, teachers, health workers. A good number of students of both the groups read the term 'road traffic accidents' from newspaper, television, books and others. All the students heard and read the term RTA in training sessions and its materials respectively.

**Table 2:** Mean, Mean difference, SD, Independent t value of pre-training knowledge score of group A and group B on prevention of road traffic accident (A = 50, B = 50)

Group	Variable	Observation	Mean	Mean Diffence	SD	t Value	df	p value
A	Knowledge	Pre-training	10.6	.2	1.4	.74	98	>.05
B	Knowledge	Pre-training	10.4		1.4			

Pre-training knowledge of both the groups (multimedia assisted teaching-learning group and traditional teaching-learning group) had been assessed. Result depicted that the mean difference was found .2 and this was not significant ( $p > .05$ ,  $df = 98$ ). It can be decided that both the groups had homogenous pre-training knowledge level (Table 2).

There was no significant association ( $p > .05$ ,  $df = 1$ ) between pre-training knowledge score and selected demographic variables like age and sex of the respondent, educational and occupational status of father and mother of the respondent among either of these groups (Table 3 & 4).

$\chi^2 = 3.84$ ,  $df = 1$ ,  $p < 0.05$  in case of significant and  $\chi^2 = 3.84$ ,  $df = 1$ ,  $P > .05$  in case of not significant

Two modes of teaching-learning sessions were utilized to impart knowledge on prevention of Road Traffic Accidents. The results of these two modes have been compared here. The mean post-training (traditional method of teaching) knowledge score was

**TABLE 3:** Association between pre test knowledge scores on prevention of road traffic accident and selected demographic variables of group A students (n1 = 50)

Selected variables	Calculated chi square value	df	Significance
Age	2.117	1	Not Significant
Sex	0	1	Not Significant
Father's Education	1.497	1	Not Significant
Father's occupation	1.317	1	Not Significant
Mother's education	.434	1	Not Significant
Mother's occupation	.593	1	Not Significant

$\chi^2 = 3.84, df = 1, P > 0.05$

**TABLE 4:** Association between pre test knowledge scores on prevention of road traffic accident and selected demographic variables of group B students (n2 = 50)

Selected Variable value	Calculated chi square	df	Significance
Age	3.402	1	Not Significant
Sex	2.919	1	Not Significant
Father's Education	.001	1	Not Significant
Father's occupation	.012	1	Not Significant
Mother's education	.125	1	Not Significant
Mother's occupation	1.472	1	Not Significant

significantly higher than the mean pre-training knowledge score with t value 24.5 for 49 degrees of freedom at .05 level of significance which was suggesting the effectiveness of teaching.

The mean post-training (multimedia assisted teaching) knowledge score was significantly higher than the mean pre-training knowledge score with t value 27 for 49 degree of freedom at .05 level of significance which is suggesting the effectiveness of multimedia assisted teaching.

The result revealed that the mean post-training knowledge score

**TABLE 5:** Mean, Mean difference, SD, Independent t value of post-training knowledge score of group A and group B on prevention of road traffic accident (A = 50, B = 50)

Group	Variable	Observation	Mean	Mean Difference	SD	t Value	df	P level
A	Knowledge	Post test	15.94	.54	3	2	98	p < .05
B	Knowledge	Post test	15.4	2				

Angie Tatiana Galvis in the year 2011 found in a comparison of Computer Assisted Instruction (CAI) and Traditional Classroom Lecture (TCL) to introduce the occupational adaptation theory that there was no significant difference ( $p < .05$ ) in baseline knowledge about the theory between the two groups. Results showed significant differences between the two groups in cognitive gains ( $p < .05$ ) with the CAI group demonstrating more cognitive gain than the TCL group. Additionally the CAI group spent 46% less time than the TCL group to cover the material. The result of this study suggested that occupational therapy learner could independently learn theory using computer assisted instruction materials.<sup>6</sup>

This study showed that mean difference of pre-training and post-training knowledge score of the respondents on prevention of road traffic accident was found statistically significant in both the administered teaching methods. This showed that the obtained mean difference between pre-training and post-training knowledge score was a true difference and not by chance. The study indicated that the planned teaching programme on prevention of road traffic accident in both the study sessions significantly increased the knowledge in post-training situation.

B Muneeswari conducted a quasi-experimental study in 2014 to assess effectiveness of planned health teaching programme on selected first aid measures among school children using child to child approach. The result showed that mean pre and post test value were 10.26 and 21.55. The study concluded that about 68.5% of students gained adequate knowledge after teaching programme using child to child approach.<sup>7</sup>

A comparative study to evaluate the effectiveness of computer assisted instruction versus class room lecture for computer science

of the students received multimedia assisted teaching was higher than the mean post-training knowledge score of the student received traditional teaching by mean difference .54 (Table 5) and it was significant as evidenced from the t value 2 at .05 level of significance where df is 98.

**DISCUSSION:**

This study revealed that Multimedia Assisted Teaching is more effective than Traditional Teaching for enhancing knowledge on prevention of road traffic accident among secondary school students.

at ICS (intermediate in computer science) level by Kausar T, Chowdhury BN, 2008 reveals that total gain in cognitive domain by CAI was significantly superior to the total gain in cognitive domain by CRI teaching method. This study concluded that the skill of analysis and synthesis was assured with significant increase. The CAI proved to be very much effective in increasing the evaluation and application skills of students to experimental group. According to the results of this study it was suggested that CAI as an effective teaching method should be applied to improve teaching quality and by using CAI it will be possible to eliminate lingual, regional and ethical biases between teacher and student.<sup>8</sup> This study supported the findings of present study.

Md A and Khushi M conducted a study on comparison of traditional method and computer aided instruction on students achievement in educational sphere at Bangladesh in the year 2011 where they depicted that the computer aided instruction proved as more effective method as compared with traditional method of instruction to enhance student learning at knowledge, comprehension and application levels at the cognitive domain in the subject area of educational research at university level. Learner's active participation in instructional process resulted in better achievement and audio-visual material used in CAI was found to be feasible and more effective for teaching educational research. Findings of this study may be a source of encouragement for the widespread use of CAI at various grade levels and in varied subject areas.<sup>9</sup> This study is supporting present study on school students.

In the comparative study by Afyouni B, Tabatabai M of lecture based and multimedia based training method on the second year students competency in general electronics conducted in the year 2016 depicted that the electronic functional skills training score on

multimedia based group was significantly higher than lecture based group.<sup>10</sup> Present study found similar result.

Qayumi AK et al performed a study in medical students. Study groups were found with significant gains in performance on knowledge and performance measures. The performances of the groups did not differ on the Objectively Structured Clinical Evaluation (OSCE). Other important findings were that high achieving students' learning was independent of study method. Lower achieving students performed better after using computer-based learning methods.<sup>11</sup>

Sewasew D, Mengestie M, Abate G conducted a comparative study on power point presentation and traditional lecture method in material understandability, effectiveness and attitude. The study revealed that lecture method was more helpful than power point presentation in material understandability and effective in teaching-learning process and it was statistically significant.<sup>12</sup> Their findings were not similar with the present study.

A comparative study conducted by Rondon S, Sassi FC, de Andrade CR on computer game-based and traditional learning method: a comparison regarding students' knowledge retention conducted in the year 2013 and the result depicted that students that received the game-based method performed better in the post test assessment only when considering the anatomy questions section. Students that received the traditional lecture performed better in both post test and long term post test when considering the anatomy and physiology questions. The game-based learning method was comparable to the traditional learning method in general and in short-term gain, while the traditional lecture seemed to be more effective to improve students' short and long term knowledge retention.<sup>13</sup> Their findings were partially similar with the present study. Long term gain was not assessed in the present study.

Hodques MCR carried out a study on computer aided instruction compared to a traditional method of teaching in elementary mathematics and it was revealed that no significant difference was present in the achievement between the two groups when directly comparing computer aided instruction to traditional instruction or no significant difference was found between the two teaching methods.<sup>14</sup> This study did not find the findings similar to present study.

Most of the studies have shown that multimedia assisted teaching method was much more effective than a class room teaching to enhance the knowledge level among school students in several areas though some studies depicted that traditional method was also an effective teaching learning method for the students. Therefore this kind of comparative studies between multimedia assisted teaching versus traditional method of teaching on a burning issue like 'prevention of road traffic accident' could be able to establish which method of teaching should be used to enhance the knowledge level and to motivate the school going children to change their attitude and subsequently to practice the right one.

**CONCLUSION:** Parents might be the good source of information. Parental education may play their role to learn RTA. The newspapers, television might be alternative. The effect of multimedia assisted teaching was better than the effect of traditional teaching on prevention of road traffic accident.

**Implication:**

The findings of the present study can be applicable in various areas of nursing education like nursing practice, nursing class, nursing administration and nursing research in health.

**Recommendation**

To achieve significant result in class room teaching the multimedia assisted teaching can be promoted. For the reduction of mortality and morbidity, the classroom teaching since school life on prevention of RTA will be an effective effort as this is their learning age.

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