

## Impact of health education through audiovisual aids on knowledge of wearing helmets among the two-wheeler riders in technical institute of Belagavi - An interventional study

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**Abstract:** *Background:* Road traffic injuries (RTIs) are increasingly being recognized as a global public health problem. Nearly half of those dying on the world's roads are "vulnerable road users": pedestrians, cyclists, and motorcyclists. Road traffic injuries are the leading cause of death among people aged between 15 and 29 years. Aim of this study was to assess the impact of health education using audio visual aids, regarding use of helmets on the knowledge of two wheeler riders. *Methodology:* The pre and post study was conducted on students of Technical Institute, Belagavi .Pre-tested questionnaire was used to collect data. Audio-visual aids prepared by interviewing parents of the victims in RTA were used for Health Education. Pre test was conducted before health education and post-test was done immediately. A delayed post test was conducted after 1 month period. Data was analyzed using SPSS software. *Results:* This study was conducted on 375 participants among which 49% were male and 51% female. The mean knowledge in the pre-test was 6.55 which increased to 7.23 in the immediate post test & 7.61 in the post test after one month. *Conclusion:* There is an increase in the knowledge regarding helmet use after health education through audiovisual aids.

**Keywords:** Helmet, Pre-post study, Two-wheeler Riders, Impact of Health Education, Audiovisual Aids.

### Introduction

Every year about 1.25 million people die as a result of road traffic crashes.90% of the world's fatalities on the roads occur in low- and middle-income countries, even though these countries have approximately 54% of the world's vehicles. Nearly half of those dying on the world's roads are "vulnerable road users": pedestrians, cyclists, and motorcyclists.Road traffic crashes cost most countries 3% of their gross domestic product [1]. According to Global Status Report on Road Safety, RTIs were 9th leading cause of death in 2004. If no sustained action is taken then it will be seventh leading cause of death by 2030 overtaking diabetes and HIV/AIDS [2].

The newly adopted 2030 Agenda for Sustainable Development has set an ambitious target of halving the global number of deaths and injuries from road traffic crashes by 2020 [1]. In India according to national statistics 2013, 38.9 per 1000 population had road traffic crashes and were associated with 11 fatalities and 39.6 injuries [3]. According to study conducted in Vadodara one road accident every minute and one road accident

death for every 4 minute occurs in India [4] Karnataka ranked fourth highest among states in the number of road crash deaths in India and second of all states in India, in total number of road accident injuries [5]. Wearing helmet results in 70% reduction in the risk of head injury and 40% decrease in risk of mortality and reduces the length of hospital stay and medical costs of injured riders [6].

Creating an awareness regarding the road safety and prevention of accidents will reduce the morbidity and mortality related to Road traffic accidents. It saves more lives and is also a cost effective intervention. Aim of the study was to assess the impact of health education through audio visual aids regarding the knowledge of two wheeler riders regarding wearing helmets.

### Material and Methods

A Pre & Post study was conducted in a technical institute in Belagavi city. Study was carried out within the period of August 2016 - February 2018.

Students of technical institute in Belagavi city were the study population. Using convenient sampling technique, students who drove two wheeler at least once in last year and who attended all the sessions i.e. health education session along with pre and post surveys were included in the study. Students who do not wish to sign on the consent form and students who remained absent on the data collection days were excluded. Considering the prevalence of helmet use as 30%,[6]and using formula Sample Size (n) =  $z^2pq/d^2$  where, 'd' is the Absolute Error, (5%) we derived a sample size(n) of 323 for the study.

Ethical clearance from Institutional Ethics Committee (I.E.C.) of J.N.M.C. KLE Academy of Higher Education and Research, Belagavi was obtained for the study. Informed consent was taken to maintain privacy and confidentiality of the study participants.

*Data collection procedure:*

The present study was conducted on students of Technical Institute, Belagavi. Pre-tested questionnaire was prepared to collect data. The Questionnaire consists of 2 parts. The first part is about Demographic characteristics of participants the Second part is about Knowledge regarding Helmet wearing.

Pilot study- 10% of the sample was included in the pilot study to assess the feasibility of the study and validity of the questionnaire. Accordingly the questionnaire was revised after pilot study. Permission from technical college was obtained for data collection. Health education

session was conducted for period of 30mins, which included filling of pre test questionnaire, a power point presentation on helmet safety followed by video prepared by interviewing parents of the victims in RTA. Immediately after health education participants were asked to fill post test questionnaire. In each session there were 30-40 participants. Hence 10 sessions were conducted. After a month, another post was conducted using same questionnaire.

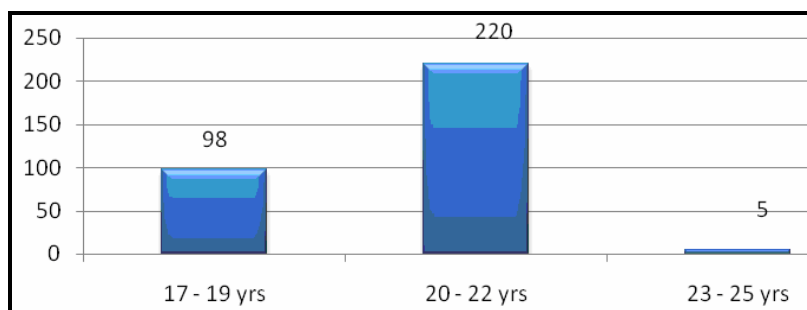
Data entry and analysis was done by using the statistical package for social sciences (SPSS). Paired t Test was used to test significance.

**Results**

Pre and Post study was conducted for a period of 10 months from March to December 2017. Initially, Pre test and immediate post test was conducted for 323 participants. Post test was conducted after one month in which 275 participants responded (20% non response). Hence the total sample considered for analysis was 275 participants.

*Socio-demographic profile:* In present study, maximum number of participants 220(68.11%) were in the age group of 20-22 years, followed by 98(30.34%) participants were in the age group of 17-19 years, 5(1.55%) participants were in the age group of 23-25 years. The male participants were 160(49.53%), and female participants were 163(50.46%). Distribution of male and female participants was almost equal.

**Graph-1:** Age wise distribution of study participants



*Knowledge towards wearing motorcycle helmets:* In this study, during pre-test, 262(95.27%) participants gave correct answer for 'reason to wear motorcycle helmets', 269(97.81%)

participants gave correct answer in immediate post test, and 272(98.9%) participants gave correct answer after 1 month of post test. Individual safety of two wheeler rider was the

right answer. During pre-test, 271(98.54%) participants gave correct answer for 'helmet compulsion while riding motorcycle', but 4 gave different answer. In immediate post-test and post-

test after 1 month, all participants gave correct answer i.e. helmet is compulsory while riding motorcycle (table-1).

**Table-1: Participants knowledge regarding wearing motorcycle helmets**

Knowledge on	Answers	Pre test	Immediate post test	Post test after 1 month	Increase in knowledge
Reason to wear motorcycle helmets	Right Answer	262(95.27%)	269(97.81%)	272(98.9%)	3.33%
	Wrong Answer	13(4.73%)	6(2.19%)	3(1.1%)	
Helmet compulsion while riding motorcycle	Right Answer	271(98.54%)	275(100%)	275(100%)	1.46%
	Wrong Answer	4(1.46%)	0	0	
Punishment for not wearing helmet while riding	Right Answer	197(71.63%)	205(74.54%)	242(88%)	16.37%
	Wrong Answer	78(28.37%)	70(25.46%)	33(12%)	
Worst result that could happen after falling from motorcycle without wearing helmet	Right Answer	123(44.7%)	170(61.8%)	187(68%)	23.3%
	Wrong Answer	152(55.3%)	105(38.2%)	88(32%)	
Worst situation that could happen after knocked out by car or truck without wearing helmet	Right Answer	224(81.45%)	241(87.63%)	237(86.18%)	4.73%
	Wrong Answer	51(18.55%)	34(12.37%)	38(13.82%)	
Criteria for selection of helmet	Right Answer	248(90.18%)	265(96.36%)	267(97.07%)	6.89%
	Wrong Answer	27(9.82%)	10(3.64%)	8(2.92%)	
Percentage(%) of reduction of death due to head injury while wearing helmet	Right Answer	172(62.54%)	232(84.36%)	236(85.81%)	23.27%
	Wrong Answer	103(37.46%)	43(15.64%)	39(14.19%)	
Major reason for not wearing helmet	Right Answer	27(9.81%)	46(16.72%)	107(38.9%)	29.09%
	Wrong Answer	248(90.19%)	229(83.28%)	168(61.1%)	

During pre-test, 267(97%) participants gave correct answer for 'punishment for not wearing helmet while riding, 269(97.8%) participants gave correct answer in immediate post-test, and 271(98.54%) participants gave correct answer after 1 month of post test. Out of 275 participants, 197(71.63%) gave correct answer regarding legally punishment i.e. Rs.100/- fine for not wearing helmet, similarly 205(74.54%) and 242(88%) gave correct answers and increase in knowledge was observed.

'Death of a motorcycle rider' was the worst result that could happen after falling from motorcycle without wearing helmet. This answer was correctly responded by 123(44.7%) and 170(61.8%) in pre-test and immediate post-test

respectively, and 187(68%) participants gave correct answer after 1 month of post-test. So there was increase in knowledge by 23.3% observed after health education.

In this study, 224(81.45%) participants gave correct answer for 'worst situation that could happen after knocked out by car or truck without wearing helmet' in pre-test, 241(87.63%) participants gave correct answer in immediate post test, and 237(86.18%) participants gave correct answer after 1 month of post test. The correct answer was death of a motorcycle rider.

During pre-test, 248(90.18%) participants gave correct answer in regard to 'selection

criteria for helmet' i.e. assured quality tested by competent authority, where as 27(9.82%) participants gave wrong answer. Similarly in immediate post-test, 265(96.36%) gave correct answer and 10(3.64%) gave wrong answer. In post-test after 1 month, 267(97.07%) gave correct answer and 8(2.92%) gave wrong answer.

In this study, 172(62.54%) participants gave correct answer in pre-test, 232(84.36%) participants gave correct answer in immediate post test, and again 236(85.81%) participants gave correct answer after 1 month of post test. The correct answer was 40% of reduction of death due to head injury while wearing helmet.

In this study, 27(9.81%) participants gave correct answer in regard to 'major reason for not wearing helmet' in pre-test, 46(16.72%) participants gave correct answer in immediate post test, and again 107(38.9%) participants gave correct answer after 1 month of post test, which were uncomfortable,

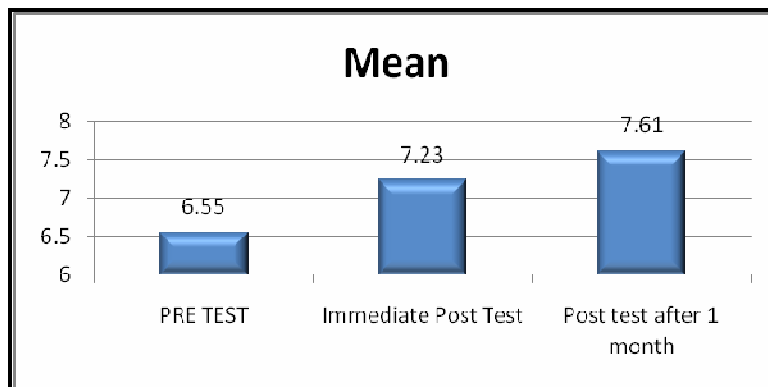
mess up hair, experienced rider, traveling shorter distance. So, there was an increase of 1.46% -29.09% in knowledge regarding helmet wearing due to health education, depending on different question.

**Table-2: Average increase in knowledge score**

Group	Mean	Percentage (%)
Pre-test	6.55	72.77%
Immediate post-test	7.23	80.33%
Post-test after 1 month	7.61	84.55%

In the pre-test about health education, the overall knowledge score was 6.55(72.77%). After giving health education there was increase in score up to 7.23(80.33%), and even after 1 month the score was 7.61 (84.55%), so there was good retention of knowledge observed after intervention (Table 2).

**Graph-2: Average increase in knowledge score**



**Table-3: Comparison of knowledge score between pre and post test**

	Paired Differences				t	Df	P value	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pre test - Immediate post test	6.55	1.244	0.75	0.829	0.531	8.962	274	0.000

Paired t Test was used to test significance, so, there was a significant increase in knowledge from pre-test to immediate post-test for all question (p<005). (Table 3)

**Discussion**

The aim of this study was to assess the impact of health education through audio-visual aids on knowledge, attitude and practices of two wheeler riders regarding wearing helmets.

There have been no studies investigating the effectiveness of health education through audio-visual aids on knowledge, attitude and practices of two wheeler riders regarding wearing helmets. Most of the studies were done on bicycle helmet; the research is lagging on wearing motorcycle helmet. Hence most of our findings are compared with studies conducted on bicycle helmet. In the present study, 323 participants were included out of which there were equal number of males and females i.e.49.54% and 50.46% respectively. A study conducted by Sreedharan J, among 309 motorcyclists, 76% were males, and only 24% were females [7].

In the present study, the numbers of participants were between the age group of 18-25 yrs. A study conducted by Sreedharan J. 80% were less than 40 years of age [7]. A similar study conducted by Mallikarjun S. K., revealed that most of the participants were in the age group of 21-30 years [8]. Another study conducted by Sirinan S. majority of samples (motorcycle riders or passengers) were between 18-59 yrs [9]. All these studies are conducted among elderly population, but our study is conducted among young students.

In our study, there was 6.55(72.77%) knowledge score in pre-test. After giving health education, there was increase in score up to 7.23(80.33%), and even after 1 month the score was 7.61 (84.55%), so there was good retention of knowledge also. Good attitude of students after health education improved from 194(70.54%) to 254(92.36%). And there was good attitude among 244 (88.72%) participants even after 1 month. There was 2.09(41.8%) practice score in pre test. After giving health education, there was increase in score up to 2.15(43%), and after 1 month there was an increase in score up to 2.83(56.6%), so there was impact of health education on good practices.

A study was conducted by Michael D et.al to determine whether kindergarten-aged children could learn and retain appropriate helmet wearing technique through an educational bicycle safety program, in Prince Edward Island, Canada. There was significant improvement in pre-test to immediate post-tests scores and pre-test to delay

post-test scores [10]. In our study, the age group of study subjects was 18 to 24 yrs and they were all two wheeler riders. There was a significant increase in knowledge from pre-test to immediate post-test for all questions ( $p<0.000$ ). Also, there was a significant increase in knowledge from pre-test to post-test after a month for all questions ( $p<0.000$ ).

### Conclusion

This study includes 323 participants out of which there were equal number of males and females. The maximum numbers of participants were between the age group of 20-22 yrs. In the pre-test, it was found that students had average knowledge regarding the use of helmet. After the health education through audio visual aids, there was significant increase in knowledge. There was good retention of gained knowledge at least for a month.

So there was a good impact of health education through audio visual aids on knowledge of two wheeler riders regarding wearing helmet.

### Recommendation

- As road accident deaths are avoidable, and as per results of this study there is significant increase in knowledge, as impact of health education through audio visual aids, so future research should emphasize on behavior change related to wearing helmet through increased health education.
- There is need of frequent health education in the form of audio visual aids.
- Enforcement of law is equally important with that health education to sensitize the importance of wearing helmet for new generations will have great role in creating awareness.

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