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ORIGINAL ARTICLE

Effectiveness of First Aid Education on High School Students in Thrissur District, Kerala

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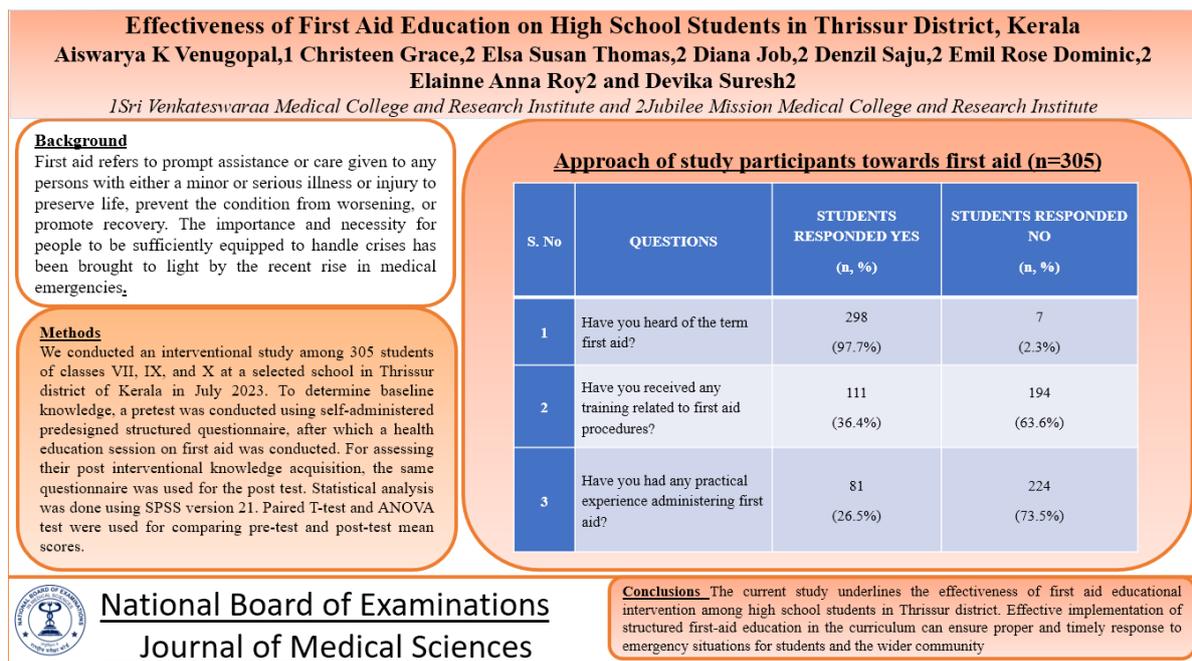
Abstract

Background: First aid refers to prompt assistance or care given to any persons with either a minor or serious illness or injury to preserve life, prevent the condition from worsening, or promote recovery. The importance and necessity for people to be sufficiently equipped to handle crises has been brought to light by the recent rise in medical emergencies. **Objective:** To assess the first aid education effectiveness on high school students in Thrissur district of Kerala. **Methods:** We conducted an interventional study among 305 students of classes VII, IX, and X at a selected school in Thrissur district of Kerala in July 2023. To determine baseline knowledge, a pretest was conducted using self-administered predesigned structured questionnaire, after which a health education session on first aid was conducted. For assessing their post interventional knowledge acquisition, the same questionnaire was used for the post test. Statistical analysis was done using SPSS version 21. Paired T-test and ANOVA test were used for comparing pre-test and post-test mean scores. **Results:** The study observed that 97.7% of the students had heard of the term “first aid”, and only 26.5% had practical experience of administering it. Xth-standard students had greater baseline knowledge compared to the VIIth and IXth standard students. The post-test scores showed a significant difference from the pre-test scores, and maximum improvement was observed for 9th standard. **Conclusion:** The current study underlines the effectiveness of first aid educational intervention among high school students in Thrissur district. Effective implementation of structured first-aid education in the curriculum can ensure proper and timely response to emergency situations for students and the wider community.

Keywords: First aid, Educational Intervention, Medical emergencies, Health education

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Graphical Abstract



Introduction

First aid encompasses the initial assistance or care given to any persons with a minor or serious illness or injury to preserve life, prevent the condition from worsening, or promote recovery [1]. It equips a person to give prompt assistance to injured persons in the accident or emergency situations. First aid can be performed by anyone with basic knowledge regarding the procedures during emergencies such as burns, bleeding, epilepsy, fractures, snake bites, animal bites, fainting, choking, and other acute medical conditions. The objective of first aid is to preserve life, prevent harm, promote recovery, and stop worsening of condition until help arrives.

The timely availability of first aid has shown a significant reduction in morbidity and mortality associated with these sudden medical emergencies. In many cases, recovery or the outcome of an injury depends on actions taken within the

first few minutes rather than the advanced care. In spite of this, among the general population, inadequate first aid knowledge and lack of awareness are a main contributors to preventable mortality. According to the various reports, up to 150,000 people a year could be dying unnecessarily due to lack of awareness of first aid [3]. According to the World Health Organization, 20% of people involved in road accidents expire due to delays in first aid, and 2/3rd of deaths occur within 25 minutes after the trauma. So, a considerable number of deaths occur due to the delays in getting appropriate and immediate first aid, emphasizing the need for first aid education.

School-based health education plays a vital role in making an alert, prepared, and response-ready community. Especially high school students are the ideal group for training in first aid, as they have the maturity to understand emergency procedures and the ability to implement

them physically without any hesitation. This can also foster a culture of safety and responsibility that will be useful in adulthood. Also, myths about providing first aid in a non-scientific manner have deeply imprinted on the minds of people, which also need to be changed.

The rise in incidence of medical emergencies and injuries in recent years, has underscored the need for individuals to be adequately trained to deal with emergencies effectively. Therefore, it is essential to assess the effectiveness of structured first aid education programs among high school students to identify the gain in knowledge and skill acquisition. This study aims to evaluate the effectiveness of first aid education on high school students in Thrissur district, Kerala.

Methods

This was a school-based interventional study conducted from July 2023 to August 2023 among the high school students of a selected school in Thrissur district of Kerala. All students of class VIII, IX, and X who gave assent were included in the study. Students who were absent during the study were excluded. Among 686 aided schools in Thrissur, we selected one school randomly by lot sampling, which was a girl's school. Data was collected from all students of class VIII, IX, and X using the universal sampling technique. There were 305 students who met the inclusion criteria. Institutional Ethics Committee approval was obtained prior to the start of the study.

After obtaining informed consent from the school, data was collected using the predesigned structured questionnaire,

which contained two parts. The first part consisted of a sociodemographic profile, and the second part contained questions to assess knowledge regarding first aid measures. First, a pre-test was conducted using the questionnaire, followed by an intervention in the form of health education, including a demonstration of first aid measures using visual aids such as charts and videos, and then a post-test was conducted using the same questionnaire. Before administering the questionnaire, the purpose of the study was explained, and strict confidentiality of the response was ensured.

All responses were entered on Microsoft Excel and analyzed using IBM SPSS Statistics for Windows, Version 21.0 (IBM Corp., Armonk, NY, USA). For the purpose of data analysis, categorical variables were summarized as frequencies and percentages, whereas continuous variables were expressed as mean \pm standard deviation. The ANOVA test and paired-T test were used to compare the pre-test and post-test means. A value of $p < 0.05$ was considered to be statistically significant.

Results

This study is done to evaluate the effectiveness of first aid education on high school students of a school in Thrissur district, Kerala. A total of 305 study participants who satisfied inclusion criteria were enrolled for the study. The following headings discuss the study's findings.

1. Sociodemographic characteristics
2. Pretest and post test score comparison.

Table 1. Socio-demographic Profile of Study Participants (n=305)

Variable	Category	Frequency (n)	Percentage (%)
Class	VIII	115	38.0
	IX	96	31.0
	X	94	31.0
Age (years)	12	17	5.5
	13	114	37.4
	14	96	31.5
	15	78	25.6
Type of family	Nuclear	65	21.0
	Joint	47	16.0
	Three generation	193	63.0
Religion	Christian	147	48.2
	Hindu	133	43.6
	Muslim	25	8.2
Father's Occupation	Professional	74	24.3
	Semi professional	53	17.4
	Clerical/shop owner/farmer	40	13.1
	Skilled	29	9.5
	Semi Skilled	97	31.8
	Unskilled	12	3.9
Mother's Occupation	Professional	1	0.3
	Semi professional	58	19.0
	Clerical/shop owner/farmer	35	11.5
	Skilled	17	5.6
	Semi Skilled	5	1.6
	Unskilled	9	3.0
	Unemployed	180	59.0

Table 1 shows that the sample comprised 305 students, out of which the majority of the students belonged to class VIII (38%), followed by class X (31%) and class IX (31%). The age of the students ranged from 12 to 15 years, with most participants aged 13 years (37.4%), followed by 14 years (31.5%) and 15 years (25.6%). Regarding family type, a predominant proportion of students belonged to three-generation families (63.0%), while 21% belonged to nuclear

families and 16% to joint families. According to the religious distribution, Christian students comprised the largest proportion (48.2%), followed by Hindu students (43.6%) and Muslim students (8.2%). Regarding parental occupation, 31.8% of fathers were semiskilled laborers (e.g., factory or workshop laborers), and 3.9% of them were unskilled laborers (e.g., watchmen or peons). 59% of mothers were unemployed (homemakers), and only one was a professional.

Table 2. Approach of study participants towards first aid (n=305)

S. No	QUESTIONS	STUDENTS RESPONDED YES (n, %)	STUDENTS RESPONDED NO (n, %)
1	Have you heard of the term first aid?	298 (97.7%)	7 (2.3%)
2	Have you received any training related to first aid procedures?	111 (36.4%)	194 (63.6%)
3	Have you had any practical experience administering first aid?	81 (26.5%)	224 (73.5%)

Table 2 shows that 98% of students had heard of the term "first aid". Only 26.5% have practical experience of

administering first aid. Only 36.4% of students have received training, and the rest did not receive any training.

Table 3. Effectiveness of first aid education (n=305)

	Mean \pm SD	T value	p value
PRE-TEST	6.06 \pm 2.246	-47.464	0.001
POST-TEST	12.53 \pm 1.923		

The mean pre-test knowledge score among the participants was 6.06 ± 2.25 , which increased significantly to 12.53 ± 1.92 following the first aid education intervention. The difference between the

pre-test and post-test scores was found to be statistically highly significant, indicating a substantial improvement in knowledge after intervention (Table 3).

Table 4. Baseline knowledge in relation to class and age (n=305)

VARIABLE	N	KNOWLEDGE AT BASELINE		F value	P value
		MEAN	SD		
CLASS (n=305)					
VIII	115	5.66	2.55	7.031	0.001
IX	96	5.84	2.26		
X	94	6.76	1.61		
AGE (n=305)					
12	17	5.88	2.26	3.996	0.008
13	114	5.54	2.52		
14	96	6.26	2.23		
15	78	6.60	1.63		

Baseline knowledge scores varied significantly across different classes and age groups (Table 4). With respect to class, students in Class X had the highest mean baseline knowledge score (6.76 ± 1.61), followed by Class IX (5.84 ± 2.26) and Class VIII (5.66 ± 2.55). The difference in baseline knowledge scores among the three classes was found to be statistically significant ($F = 7.03$, $p = 0.001$).

Similarly, baseline knowledge scores showed a significant association with age. Students aged 15 years demonstrated the highest mean knowledge score (6.60 ± 1.63), followed by those aged 14 years (6.26 ± 2.23), 12 years (5.88 ± 2.26), and 13 years (5.54 ± 2.52). The variation in baseline knowledge scores across age groups was also statistically significant ($F = 3.99$, $p = 0.008$) (Table 4).

Table 5. Post-test improvement in knowledge based on class and age (n=305)

VARIABLE	N	POST-TEST IMPROVEMENT		F value	p value
		MEAN	SD		
CLASS (n=305)					
VIII	115	5.79	2.55	19.954	0.001
IX	96	7.66	2.33		
X	94	6.10	1.70		
AGE (n=305)					
12	17	6.35	1.69	3.927	0.009
13	114	6.10	2.77		
14	96	7.15	2.19		
15	78	6.22	1.94		

The magnitude of improvement in post-test knowledge scores differed significantly across classes and age groups (Table 5). With respect to class, students of Class IX demonstrated the highest mean improvement score (7.66 ± 2.33), followed by Class X (6.10 ± 1.70) and Class VIII (5.79 ± 2.55). This difference in improvement across classes was found to be statistically highly significant ($p < 0.001$).

Similarly, a statistically significant variation in post-test improvement was observed across different age groups.

Students aged 14 years showed the greatest mean improvement (7.15 ± 2.19), followed by those aged 12 years (6.35 ± 1.69), 15 years (6.22 ± 1.94), and 13 years (6.10 ± 2.77). The association between age and improvement in post-test scores was statistically significant ($p = 0.009$).

Discussion

The current study assessed the effectiveness of first aid education among high school students in a school in Thrissur district of Kerala. The findings showed a statistically significant

improvement in knowledge scores after the educational intervention, pressing the effectiveness of first aid training in adolescents. The mean knowledge score increased markedly from the pre-test to the post-test assessment ($p < 0.001$), indicating substantial knowledge accession after the intervention.

Participants had a high baseline awareness about the term “first aid,” but only a small percentage had actually administered first aid before. This gap between awareness and hands-on experience emphasizes the importance of formal training programs that stress practical skills and theoretical knowledge. Mobarak et al. and Bandyopadhyay et al. found similar results in Saudi Arabia and West Bengal, where the majority of the students knew about first aid but had not had any hands-on experience [3,8].

The results of the present study regarding the effectiveness of first aid educational intervention are in line with those of several studies done in various settings. Among school students in West Bengal, Dasgupta et al., reported significantly higher post-test knowledge scores among school students after first aid training ($p < 0.001$), which is in line with the current study [3]. Similarly, studies done in Ujjain, Thane, and Tirupur districts showed statistically significant increases in first aid knowledge after structured educational interventions [4-9]. The relevance of the first aid education as a successful public health intervention is reinforced by these consistent results across various geographic and sociocultural situations.

The interactive and structured nature of the educational session may have contributed to the observed increase in knowledge by improving students’

understanding and memory of the information. Because they have the cognitive maturity to comprehend emergency response concepts and the capacity to use these abilities in practical settings, adolescents are a population that is open to such programs. Early first aid training can ameliorate emergency response by increasing willingness and reliable behavior.

Encompassing first aid training in the school educational curriculum could remarkably refine public health given the surge in medical emergencies and accidents. Additionally preparing students for emergency situations, first aid instruction fosters responsible and safer behavior in them.

The limitations of the study include measuring short-term acquisition of data without taking long-term retention or practical skill performance into account, and the single-school setting may limit generalization. Additionally, it was conducted in a girls' school, making gender comparison impossible. In order to assess persistent knowledge and skill application, future research may take into account involving multicentric designs and follow-up evaluations.

Conclusion

This study concludes that first aid education is an effective intervention for improving knowledge among high school students. Early implementation of structured first aid education in schools might be crucial in enabling teenagers to react effectively in emergency situations and therefore to be regarded as a crucial part of school health initiatives.

Statements and Declarations

Conflicts of interest

The authors declare that they do not have conflict of interest.

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Human and animal rights

This article does not contain any studies with human participants or animals performed by any of the authors.

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