

EFFECTIVENESS OF HEALTH EDUCATION IN TERMS OF KNOWLEDGE ACQUISITION ON FIRST-AID MEASURES AMONG SCHOOL STUDENTS OF A RURAL AREA OF WEST BENGAL

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Submitted on: November 2014

Accepted on: November 2014

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Abstract

Background: Imparting school children with appropriate knowledge on prevention, control and management of common illnesses and injuries will play a long way in reducing the morbidity and mortality of the population of all ages and sex. Hence, any above related training is unquestionably a sound and logical investment which is the most important objective of this study. **Method:** About 105 students of a rural school of West Bengal were administered with a self-administered questionnaire for assessing their baseline knowledge about selected first-aid skills, followed by on-the-spot demonstration of the skills with the help of a systematically devised teaching module on the same day. Post intervention evaluation of their knowledge acquisition was done after 2 weeks with same questionnaire. A scoring system was devised to quantify the knowledge of students on first aid. **Results:** The baseline knowledge of the study subjects was found to be inadequate, correct responses being provided by less than 50% of the subjects for most of the questions. The lowest percentage of correct response was obtained regarding the management of choking (8.6%). Paired-t Test was done to evaluate the effectiveness of the health education as well as Mc Nemar's chi square test was done individually for each of the questions to determine the significant improvement in post training knowledge score. The latter was found to be significantly better than the pre education score. **Conclusion:** Knowledge of school students regarding the management of common illnesses and injuries should be incorporated as a part of school curriculum.

Key words First-aid, education, Common illnesses and injuries, school children

Introduction

First-Aid is the provision of initial care for any injury or illness until full medical treatment is available. It can be provided by a bystander who remains in close proximity with the victim who has suffered from the injury or illness or the victim himself/herself

and need not necessarily be the domain of medical personnel^[1]. The primary objective of first aid is to alleviate suffering, facilitate healing process and minimize damage. Administration of first aid requires simple techniques and minimal or no equipment but can be potentially lifesaving in many

instances. But in order to administer correct first-aid management, a basic training needs to be acquired from experts. Otherwise wrongly administered first-aid can inadvertently lead to harmful consequences.

In their day to day life, school students often suffer from injuries like cuts, sprains, burns, insect bites, snake bites, dog bites, choking, epileptic fits, nosebleeds etc to just name a few. Also various incorrect practices and myths associated with illnesses and injuries still exist. As for example, applying lime on cuts, toothpaste on burns and smelling of slippers/sandals in case of epileptic fits. Furthermore, the knowledge has been documented to be fragmented, disintegrated and non-sequential and often totally incorrect.

Students have the potential for changing the health scenario of the society if properly groomed and educated for healthful living. In India the school health services are available for primary schools (6- 11 years) but is optional for middle and secondary class students. Moreover school health programmes in India give limited emphasis on first aid in the educational curriculum which is a major handicap^[2&3]. Compared to this scenario, first aid is a more frequently taught subject in the health curriculum of home schools in other countries.

Hence this study was undertaken to train the high school students of class 9 and 10 of a rural school in West Bengal on selected first aid measures of common injuries and illnesses encountered in day to day life. The high school students were purposely selected for the training because on account of their mid- adolescent age it was expected that their message receiving capacity, their yearning to learn and their enthusiasm to preach and practice what is imparted to them will be of the highest order. Moreover, since they belonged to the senior most grades in the school, they

could be relied upon to disseminate the knowledge to their friends as well students belonging to the lower classes. The main objectives of the study were to assess the knowledge of high school students regarding selected first-aid measures of common injuries/illnesses in a rural school of West Bengal, to impart education to the study population regarding correct first-aid practices and to determine the effectiveness of the education imparted in terms of significant difference in knowledge before and after the education.

Methodology:

Study Type: - A school based interventional study.

Study Area: - Hakimpur Tustucharan High School under Nasibpur subcentre, rural block of Singur, West Bengal.

Timeline: - The study was conducted over a period of one month between 25th July 2014 to 24th August 2014.

A date was selected to test the knowledge of the students regarding first aid practices. On that very day following the test, education was given to them regarding correct first aid practices.

Then on a later date after about 2 weeks from the previous date, the same students were evaluated to assess their post training knowledge.

Study Population: - Students of Class Nine and Ten, their total number being 105

Inclusion Criterion:-

- All students of class nine and ten.
- Both male and female students.

Exclusion Criterion:-

- Students who were absent on the first day of data collection.

Study Tools:-

1. A self-administered semi-structured questionnaire: The questionnaire was prepared in English and then translated into the local language (Bengali) keeping semantic equivalence. The face and content

validity of the questionnaire was checked by experts in the department of Community Medicine at the All India Institute of Hygiene and Public Health, Kolkata, West Bengal

The questionnaire contained two sections:-

SECTION (1) - Pre-Test: Demographic information like Name, Age, Sex, Religion and Caste

Post Test: - Name of the respondent

SECTION (2) - Pre-test and Post Test: Comprising 11 multiple-choice questions to elicit the knowledge of the study population about first-aid management of common illnesses and injuries with four options each, among which one was correct. The 12th question in the pre-test questionnaire sought to find out any prior exposure of the study population to first-aid training before this intervention. Whereas in the post-test questionnaire, the 12th question sought the feedback from the study population regarding their perceived utility of the health education imparted to them.

2. A self-constructed teaching module containing systematically organised information about selected first-aid measures like management skills of minor cuts, sprain, minor burns, epistaxis, foreign body in the eye, insect bite, snake bite, dog bite choking and epileptic fits. All was explained through a power point presentation with relevant pictures and diagrams.

3. Selected items which could be kept in a first-aid box like elastic bandage, tweezers and essential drugs were shown to the participants.

Data Analysis: - A scoring system was developed to assess the pre-education and post-education knowledge by assigning for every correct response a value of “1” and for every wrong response a value of “0” on the eleven multiple choice questions. Total

score was “11” for pre-test as well as for post-test. The twelfth question of both the questionnaire was not given any score and used solely for information purpose. So the comparison of the pre-education and post-education scores was done on the basis of the eleven multiple choice questions.

Data analysis was done using SPSS version 19. The pre education and post education scores were evaluated using Paired t-test. Then Mc Nemar’s chi square test was performed individually for each question to prove statistically significant change in knowledge following health education as compared to knowledge before education.

Ethical Consideration: - The proposal for the study was approved by the Institutional Ethics Committee. Permission was obtained from Rural Health Unit and Training Centre, Singur to carry out this study in a school under the Nasibpur subcentre after obtaining necessary permission from the mother institute i.e. All India Institute of Hygiene and Public Health. Informed verbal consent was obtained from the Principal and class teachers of ninth and tenth grade of the school.

Results:-

The study population mainly comprised students aged 14 years (58.9%) followed by those aged 15 years (38.09%) and only (3.85%) being 16 years of age as shown in Table 1. Besides the subjects were mostly girls (56.2%), with boys accounting for (43.8%) of the group. The subjects mostly practiced Hinduism (68.6%) and only (31.4%) belonged to the Muslim community. Moreover the subjects mostly belonged to the General caste (68.6%) with (20%) being OBC and (11.4%) belonging to the SC/ST category. Only (4.8%) of the subject had received prior first-aid training. On comparing the number and percentage of correct responses obtained for each of the questions made to elicit the knowledge of

the subjects regarding selected first-aid measures, a remarkable improvement was seen for every question after imparting the health education, as is seen in Table 2.

Before education the minimum percentage of correct response was obtained for the question on the management of choking (8.6%). But after education the percentage of correct response for the same question rose to (95.2%) as seen in Table 2. And similarly improvement was seen for every question.

The maximum percentage of correct response was obtained for the question on first aid management of foreign body in the eye (82.9%) and minimum correct response percentage was obtained for the management of choking (8.6%) before education. Whereas after imparting education, the maximum percentage of correct response was obtained for the question on management of minor

cuts/wounds(99%) as well as the question on management of foreign body in the eye(99%) and the minimum percentage on the question for the management of epileptic fits(54.3%) .

The Paired t Test was performed to compare the pre and post education scores for each of the eleven questions and significant difference was found in both the scores .The “t” values obtained were significant as determined from the “t Table” along with significant “p” values <0.05 for all the questions as seen in Table 3.

Mc Nemar’s chi square test was performed for each of the eleven questions separately (results not shown) and significant difference was obtained between the pre and the post education scores for each of the questions

Table 1: Demographic Characteristics and Exposure to Prior First-Aid Training

VARIABLE	NUMBER OF STUDENTS (PERCENTAGE) N (%)
AGE:	
14 years	61 (58.09)
15 years	40 (38.09)
16years	4 (3.85)
GENDER:	
Male	46 (43.8)
Female	59(56.2)
RELIGION:	
Hindu	72(68.6)
Muslim	33 (31.4)
Christian	0 (0)
Sikh	0 (0)
Others	0 (0)
CASTE:	
General	72 (68.6)
OBC	21 (20)
SC/ST	12 (11.4)
EDUCATION:	
Studying in class nine	50 (47.6)
Studying in class ten	55 (52.38)
EXPOSURE TO PRIOR FRIST-AID TRAINING:	
Yes	5 (4.8)
No	100 (95.2)

The majority of subjects were 14 years old (58.09%). females (56.2%), practicing Hinduism (68.6%) and belonging to the General caste (68.6%). (47.6%) studied in

class nine whereas (52.38%) were students of class ten. Only (4.8%) of the study population had been exposed to prior first-aid training.

Table 2: Number and Percentage of Correct Responses- Before and After Health Education

QUESTIONS(11)	CORRECT RESPONSES BEFORE EDUCATION N (%)	CORRECT RESPONSES AFTER EDUCATION N (%)
Meaning of the term first-aid	16(15.2)	82(78.1)
First-aid management of minor cuts/wounds	65(61.9)	104(99)
First-aid management for sprain	29(27.6)	72(68.6)
First-aid management for nosebleeds/epistaxis	12(11.4)	92(87.6)
First-aid management for foreign body in eye	87(82.9)	104(99)
First-aid management of minor burns	38(36.2)	96(91.4)
First-aid management for insect bite	11(10.5)	79(75.2)
First-aid management for snake bite	50(47.6)	103(98.1)
First-aid management for epileptic fits	19(18.1)	57(54.3)
First –aid management for choking	9(8.6)	100(95.2)
First-aid management for dog bite	14(13.3)	81(77.9)

The number and percentage of correct response for each question is seen to have risen after imparting health education.

Table 3: Results of paired –t test to compare pre and post education scores.

QUESTION PAIRS	MEAN	S.D	Standard error mean	C.I (95%)	t	df	Significance(two-tailed)
1.(Meaning of term first-aid)	0.629	0.505	0.49	0.531-0.736	12.756	104	<0.05
2.(First-aid for minor cuts/wounds)	0.371	0.486	0.047	0.277-0.465	7.839	104	<0.05
3.(First-aid for sprain)	0.410	0.600	0.059	0.293-0.526	6.999	104	<0.05
4.(First-aid for epistaxis)	0.762	0.428	0.042	0.679-0.845	18.243	104	<0.05
5.(First-aid for foreign body in eye)	0.162	0.370	0.036	0.090-0.234	4.482	104	<0.05
6.(First-aid for minor burns)	0.552	0.500	0.049	0.456-0.649	11.329	104	<0.05
7.(First-aid for insect bite)	0.648	0.480	0.047	0.555-0.741	13.825	104	<0.05
8.(First-aid for snake bite)	0.505	0.502	0.049	0.408-0.602	10.296	104	<0.05
9.(First-aid for epileptic fits)	0.362	0.521	0.051	0.261-0.463	7.116	104	<0.05
10.(First-aid for choking)	0.867	0.342	0.033	0.801-0.933	26.000	104	<0.05
11.(First-aid for dog bite)	0.644	0.501	0.049	0.547-0.742	13.118	104	<0.05

The “t” value (obtained from t table) along with the “p” value has been found to be significant for each set of paired data

Discussion: The subjects were mostly 14 years of age (58.09%), Hindu (68.6%) females (56.2%) belonging to the general caste (68.6%). But (95.2%) of them had never been exposed to any sort of first aid-training before this study was undertaken. And the remaining (4.8%) who had received training had done so mainly from parents, relatives, friends and neighbours. So the credibility of the correctness of the knowledge they gained from such exposure remains ambiguous because the pre-test scores of these subjects were not any better from the rest.

Merely (15.2%) of the study subjects knew about the correct definition of the term “first-aid” and most believed that first aid could only be provided by doctors and health workers and not by common people. A similar study conducted in 2006 among school teachers in Bangalore showed that merely 13.3% had adequate knowledge regarding the meaning of the term first-aid^[5].

A study^[6] has reported that various items like kerosene oil, mobile oil, mustard oil, urine, honey, plant bark extract, mud, alum and vinegar, talcum powder were used for management of cuts and wounds whereas, in this study (61.9%) knew about the correct management of cuts and wounds. But (48.1%) subjects still possessed wrong myths regarding the management of cuts. Some subjects still believed that immediate application of lime on cuts could stop the bleeding and hasten the healing process.

The idea regarding the management of epileptic fits was drastically incorrect with only (18%) of the subjects providing correct response. This result is consistent with various studies conducted in different parts of the world producing similar result. A study by Zielinska et al^[7] in 181 students of two secondary schools of Poland also shows that only (2%) of the students knew how to provide first aid during an epileptic fit. The

knowledge regarding the first-aid management of epistaxis and insect bite was also poor with only (12%) and (10.5%) giving correct responses respectively. And the worst percentage was obtained regarding the management of choking (, 8.6%).

The knowledge about management of minor burns was inadequate as well with only (36.2%) subjects knowing the correct practice. Ghosh et al in a group of school children^[8] of Jamshedpur, India also quoted poor knowledge regarding management of burns maintaining similarity with the results of this study.

The knowledge regarding the management of dog bites and snake bites were also found to be poor like in a study conducted in a Government school of Chandigarh^[9] with 120 students showed that only one third of the students knew about the correct first aid management for snake and dog bites. Many incorrect practices are still prevalent such as spice/ chilly application for dog bite as shown by other studies.

An assessment after 14 days with the same set of questionnaire revealed that the scores of the subjects improved dramatically in regards to all the questions in terms of percentage of correct responses. From (15.2%) of subjects knowing about the correct meaning of the term “first-aid” before education, (78.1%) gave correct response after education. The correct response percentage for management of foreign body in the eye was raised by (17%) approximately following education. There was also improvement in the knowledge following education for the management of minor burns, epistaxis and insect bites, snake bites and dog bites. But Ghosh et al^[8] in a group of school children of Jamshedpur where the researchers reported poor post-training knowledge acquired by students regarding management of burns contradicted the result of this test. However improvement in the knowledge regarding epileptic fits was

not up to standard compared to the other items since only(54.3%) giving the correct response.

On the whole, the improvement in knowledge scores following education was found to be statistically significant in this study. Paired t Test showed statistically significant difference in the pre and the post education scores. Mc Nemar's chi square test also yielded a statistically significant result for each question.

The results were consistent with the findings of the study in Tamil Nadu ^[10] regarding the effectiveness of training programme about selected first-aid measures among school students which showed that the knowledge scores improved significantly among students following planned training programme. Another study titled “Comparative Impact of Two Training Packages on Awareness and Practices of First Aid for Injuries and Common Illnesses among High School Students in India” ^[6] showed significant improvement in the knowledge scores following training.

When the subjects were asked to give their feedbacks after the post education assessment regarding the utility of the education received by them nearly 85% of them admitted that they found the training extremely useful, informative and interesting and they would like to participate in similar training sessions in the future .

Strengths of the Study:-

Since the study was conducted in a rural school, it turned out to be of potential benefit because the rural students lag behind their urban counterparts in administering first-aid skills as the rural life is still obtunded by various myths and superstitions as well as lack of correct and scientific knowledge.

The study being conducted among the students of higher classes(ninth and tenth grade) is an apt move because since these students have reached a certain level of

maturity on account of their age they would be able to grasp the knowledge more quickly and retain it in their memory thereby percolating them to younger students of lower classes.

Moreover the conduction of post education assessment after 15 days provided an ample opportunity to assess the power of retention of the knowledge among the students.

Limitation of the Study:-

Since it was a school based study, the major limitation was the time constraint. While keeping in track with the class and recess hours, the time allotted for the training of the necessary first aid skills had to be completed within 30 minutes only.

Moreover the time factor also allowed the researcher to demonstrate only a few selected first-aid skills involving the commonly met injuries and illnesses. Thus many other important and pertinent items of this training could not be included

Besides only the students who were present on the first day of data collection could be included in the study, the rest who were absent remained deprived of the training process.

Conclusion: Therefore, there is a definite need for strengthening the knowledge among students by regular quality training programmes on first-aid in schools. In fact incorporating such training programmes into the school curriculum of higher classes would be an intelligent investment. Moreover provision should be made to give formal training to the school teachers on a regular basis so that they can handle any untoward injury or illness faced by any student during school hours. Besides they could be entrusted with the responsibility of percolating the knowledge to their students. And the most important recommendation given to the school authority should be to possess a first-aid box of their own, with the necessary equipment and medicines at ready disposal. The first-aid box should be kept

under the supervision of a responsible school teacher and he should have the correct information about the use of all the items which should be purchased or replaced from time to time to maintain both their requisite quantity as well as quality

Acknowledgements:-

We would like to offer our sincere gratitude to the “Office-in Charge” of Rural Health Unit and Training Centre, Singur for granting us the permission to conduct this study, to Mr. A. K Panda, Statistician, All India Institute of Hygiene and Public Health for helping us with the analysis and Mr. P. Das, H A (M) without whose endless support, this work would not have been possible. Our whole hearted thanks to the teachers of Hakimpur Tustucharan High School for their unconditional co-operation during the entire process and the students of grades nine and ten for their zealous participation.

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