

Original Research Article

A study to assess the effectiveness of training on first aid among students of industrial training institute in tribal area of Thane district, Maharashtra

Mandar V. Chandrachood*, Shrikala Acharya

Department of Community Medicine, Seth G S Medical College and KEM Hospital, Mumbai, Maharashtra, India

Received: 21 January 2019

Revised: 02 March 2019

Accepted: 05 March 2019

*Correspondence:

Dr. Mandar V. Chandrachood,
E-mail: drmandar5@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Sudden illness, injury or animal bites can often be serious unless proper care is administered promptly. First aid is immediate attention to one suffering from illness or injury. Everyone should be able to give effective assistance until an injured person can receive professional medical care. This study was undertaken with objectives of assessing the baseline knowledge among students of industrial training institute (ITI) about common health emergencies, their appropriate first aid measures and to conduct training on first aid through lecture and demonstration as well as to assess effectiveness of training on their knowledge about first aid.

Methods: An Interventional study. Baseline and post-test assessment of knowledge scores was carried out after a week and 16 weeks of training sessions on first aid of all students in the institute. Data analyzed by SPSS software using descriptive statistics and appropriate statistical tests of significance.

Results: Baseline knowledge about first aid in injuries and bites was higher among students than their knowledge about burns and other emergencies. Rural students and students of scheduled caste and tribe had low baseline knowledge ($p=0.015$ and $p=0.025$ respectively). Training on first aid significantly improved knowledge about all health emergencies among all students as evident from post-test scores at first week and 16 weeks ($p<0.05$). Gain in knowledge was significantly higher among rural students.

Conclusions: Students had low baseline knowledge about first aid measures. Sessions combining knowledge and skills have brought about significant improvement in the knowledge of participants irrespective of their age, caste or urban-rural background.

Keywords: First aid, Knowledge, Training, Pre-test, Post-test

INTRODUCTION

A basic knowledge and understanding of first aid can be invaluable for individuals to be able to provide emergency care in the event of an accident, possibly saving lives and minimizing injury. First aid is the providing of first and early care for an illness or injury, by a non-expert but trained person, till medical treatment can be accessed. Immediate first aid when provided to

patients who require emergency care makes a huge difference to the outcome.¹

India is developing country, because of fast development lot of industries opened in rural and urban areas. The health of the industrial workers is influenced by conditions prevailing in their work place. There are numerous factors which affect the workers in industry i.e. physical agent like heat, light, noise, cold and chemical

agents. The workers are not trained in first aid properly. So they don't know to manage some injuries, fever, burns and shock. About 10 per cent of accidents in industry are said to be due to mechanical causes.² Glendon et al suggested that the teaching of first aid to students is probably cost-effective in terms of saving lives.³ The official records state about 2,50,000 snakes bite cases occur in India every year, of which, over 50,000 die due to inadequate first aid or unscientific treatment methods. The Indian snake bite statistics are alarming as the figures are highest in the world.⁴

ITI students will later on work in different industries and areas and will be prone to accidents. When a person is hurt, the most important thing is to help.⁵ Sudden illness or injury can often be serious unless proper care is administered promptly. First aid does not replace the physician, but assists the victim until proper medical assistance can be obtained. If prompt steps are taken and medical aid is obtained, the victim's chances of recovery are greatly improved. Everyone and especially industrial workers should be able to give effective assistance until an injured person can receive professional medical care.

The present study was therefore undertaken with objectives of assessing the socio-demographic profile of study participants, their baseline knowledge about common health problems, first aid measures and to conduct training on first aid through lecture and demonstration sessions as well as to assess effectiveness of training on their knowledge regarding first aid and to suggest recommendations based on findings of the study.

METHODS

An Interventional study was conducted among students in the ITI, Sakwar. It is located in field practice area of rural health and training Center, Sakwar of the Department of Community Medicine, Seth G S Medical College and KEM Hospital, Mumbai, located at a distance of 75 kilometres from the teaching institution. The study was conducted over a period of six months from June-2011 to November-2011. Universal sampling method was used and all those students in ITI willing to participate were included in the study. Sample size was 65 (excluding 3 dropouts). All were male students as there was no female student enrolled in the Sakwar ITI. Permission from ITI authority taken before collecting required data. Informed verbal consent was taken from all the participating students before the start of the study after telling them about objectives of the study and the approximate time that will be involved in the completion of the study.

After establishing good rapport with study group, demographic profile in form of name, age, sex, caste, education, residence, etc. is taken. Pre-test proforma filled up from students to know their baseline knowledge. Questionnaire was in the form of 16 multiple choice questions assessing the knowledge about various health problems and prompt 'first aid' measures to be taken in

that case. Three sessions of lecture and demonstration were conducted about 'first aid' measures to be taken in case of injuries, burns, animal and snake bites and different emergencies. After a period of one week post-test proforma filled up from the students and again after 16 weeks.

Data entry was done using Microsoft excel. While assessing knowledge on 'first aid', scores were given; correct answer=1 and incorrect/don't know/no answer=0. All responses were tabulated and graphically represented wherever required. Data was analyzed by SPSS software version 16. Descriptive statistics like mean, percentage, frequencies and proportions were used. Test of significance for difference between two proportions (Z-test) and paired t test was used for assessment of impact of training. Chi square test and fisher exact test were used to determine the association between different variables.

RESULTS

Majority of the students (78.5%) were adolescents and studied up to 10th standard (66.2%). Most of the students (83.1%) were from rural background. 53.8% students were belonging to other backward caste (OBC) while 30.8% students were belonging to scheduled caste (SC), scheduled tribe (ST) category (Table 1).

Table 1: Distribution of participants by age, education, caste and place of residence (n=65).

Variable		Frequency	%
Age (in years)	≤19	51	78.5
	>19	14	21.5
Education	Secondary	43	66.2
	Higher secondary	22	33.8
Caste	OBC	35	53.8
	Open	10	15.4
	SC	3	4.6
	ST	17	26.2
Residence	Urban	11	16.9
	Rural	54	83.1

While assessing the baseline knowledge about first aid for injuries nearly half of the students were able to give correct answer. After training session the number of students giving correct answer in the post-test at 1week rose significantly and this knowledge was retained as seen from the results of post-test at 16 weeks. Similar findings were observed while assessing knowledge about first aid for burns, animal and snake bites and other emergencies (Table 2).

While assessing pre-test knowledge no significant association was observed with age or education but caste and residence was significantly associated. Students from rural area and belonging to SC, ST category had low pre-test knowledge ($p=0.015$, $p=0.025$ respectively). While assessing post-test knowledge no significant association

was observed with age, education, caste and residence. Gain in knowledge was significantly higher among rural

students ($p=0.03$) that could be because of low scores in pre-test knowledge (Table 3).

Table 2: Knowledge about first aid for injuries, burns, animal bites and different emergencies.

S. no.	Question about	Pre-test right answer	Post-test right answer (1 week)	Post-test right answer (16 weeks)	Z-score (between pre and post-test-1 week)	P-value
1	First aid in bleeding wound	44/65	65/65	64/65	4.97	<0.0001
2	Vaccine for contaminated wounds	29/65	59/65	61/65	5.62	<0.0001
3	Signs and symptoms of fracture	27/65	45/65	50/65	3.09	0.002
4	First aid for fractures	36/65	62/65	59/65	5.26	<0.0001
5	First aid for burns	20/65	62/65	53/65	7.5	<0.0001
6	Fire brigade contact number	30/65	57/65	54/65	5.09	<0.0001
7	Rule of nine	20/65	53/65	54/65	5.86	<0.0001
8	Disease caused by dog bite	56/65	65/65	65/65	3.12	0.0018
9	First aid for dog bite	29/65	60/65	60/65	5.76	<0.0001
10	Non poisonous snake	40/65	54/65	59/65	2.68	0.0073
11	First aid for snake bite	32/65	54/65	50/65	4.09	<0.0001
12	First aid for heat exhaustion	38/65	54/65	54/65	3.12	0.0018
13	Normal body temperature	27/65	64/65	65/65	6.96	<0.0001
14	First aid for convulsions	13/65	42/65	40/65	5.18	<0.0001
15	First aid for diarrhoea	38/65	61/65	54/65	4.8	<0.0001
16	First aid for foreign body in eye	63/65	65/65	65/65	1.40	0.15

Table 3: Association of socio-demographic factors with knowledge.

Variable	Pre-test	Post-test (1 week)	Gain in knowledge
Age (adolescent/adult)	P=0.88 (Chi square)	P>0.99 (Fisher Exact)	P=0.68 (Chi square)
Caste (OBC/open/SC, ST)	P=0.025 (Chi square)	P>0.99 (Fisher Exact)	P=0.055 (Chi square)
Residence (urban/rural)	P=0.015 (Fisher Exact)	P=0.81 (Fisher Exact)	P=0.03 (Chi square)
Education (secondary/higher secondary)	P=0.25 (Chi square)	P>0.99 (Fisher Exact)	P=0.79 (Chi square)

Training on first aid improved awareness among students in all the common health emergencies in a highly significant manner (Table 4).

Table 4: Impact of training on first aid.

Score	Mean	N	S.D.	S.E. mean
Pre-test	8.32	65	2.285	0.283
Post-test (1 week)	14.23	65	1.569	0.195

Applying paired t test: $t=-18.344$, $df=64$, $p<0.000001$.

The difference between pre-test and post-test knowledge is statistically significant.

DISCUSSION

Even though students of ITI had completed school education, they had low knowledge about first aid for common health emergencies like burns, dog bite, wounds and convulsions. Similar finding of low knowledge was

observed in study done by Semwal et al in 2017 in which only 17% students had complete knowledge of first aid and partial knowledge was found in 33.3% of students.⁶ Study done by Mobarak et al about first aid knowledge and attitude of secondary school students in Saudi Arabia in 2015 found that, the first aid preparedness in the Saudi student community is inadequate.⁷ The assessment of knowledge of the students in Cambodia revealed significant inadequacies in knowledge about burn prevention and first aid in general.⁸ However, Deepak and Nayak in 2012 studied the knowledge, attitude and practices on first aid among self-help group in India suggest that 62% had good knowledge and 38% had average knowledge which is in contrast of our study findings.⁹

Sessions combining knowledge and skills have brought about significant improvement in the knowledge of participants irrespective of their age, caste or urban-rural background. Similar findings were observed in studies

done by Van-de-velde et al and Khan et al.^{10,11} In our study, assessment of knowledge on first aid after 16 weeks of training, revealed sustained high scores among all participants.

In the study conducted by Kapoor et al among school students of Ahmedabad; the baseline knowledge about the objectives of first aid was only 36.6%. The range of knowledge about different aspects of first aid was 7.66% to 63.33% before training which increased to 39% to 92.33% as assessed after training. There was statistically highly significant difference in knowledge of students after training which was similar to our study.¹²

In the experimental study conducted by Arli et al in 2017 which utilized pre-test and post-test control group design the participants' first aid knowledge levels were assessed through a questionnaire administered as pre-test. Following this, the experimental group was provided with theoretical and practical education on first aid. Then all the participants were administered the post-test. They also found that there was a significant difference between pre-test and post-test scores of the experimental group ($p < 0.01$) similar to our study.¹³

Mathew et al in their study done in 2016 concluded that, the level of knowledge and awareness of first aid is not satisfactory among students, which emphasizes the need for compulsory first aid training program with practical activities.¹⁴ Similarly, Joseph et al in 2014 in their study among students of a medical college in Mangalore city concluded that, the level of knowledge about first aid was not good among majority of the students and there is a need for formal first aid training to be introduced in the medical curriculum.¹⁵

The findings of the study done by El-magrabi et al revealed that, there was statistical significant differences between total score of teachers' knowledge ($p = 0.000$) in pre and immediate post-test which was similar to our study with only difference that post-test was not immediate but was conducted after a week.¹⁶

Van-de-Velde et al in their systematic review study concluded that first aid programmes that also train participants to overcome inhibitors of emergency helping behaviour could lead to better help and higher helping rates.¹⁰ This helping behaviour aspect was not part of our study but future studies can be planned where training on first aid along with helping behaviour will be assessed.

This study has limitations that past work experience or past exposure to health emergencies were not included in the factors affecting pre-test knowledge and also the source of baseline knowledge was not considered.

CONCLUSION

Our study findings highlighted that the students of ITI had low knowledge about first aid for common health

emergencies. Training sessions combining knowledge and skills have brought about significant improvement in the knowledge of all participants. Considering these results, it is recommended that educational sessions on common health emergencies and appropriate 'first aid' measures should be held in ITI to empower the students to handle common work related emergencies. Training on first aid for common accidents or injuries and preventive measures should also be included in the curriculum of industrial/vocational training institutes.

ACKNOWLEDGEMENTS

Authors are highly thankful to Sakwar ITI for permitting this research study and for providing all assistance and constant comfort during the course of this study. We also thank the students of ITI for taking part in the study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Kendrick D, Mulvaney CA, Ye L, Stevens T, Mytton JA, Stewart-Brown S. Parenting interventions for the prevention of unintentional injuries in childhood. *Cochrane Database Syst Rev*. 2013;28:3.
2. Park K. Text book of preventive and social medicine. 24th edition. Jabalpur, Bhanot; 2017: 840-856.
3. Glendon AI, McKenna SP, Blaylock SS, Hunt K. Evaluating mass training in cardiopulmonary resuscitation. *Br Med J*. 1987;294(6581):1182-3.
4. Bhalwar R. Text book of public health and community medicine. 1st ed. Pune, Department of Community Medicine AFMC in collaboration with WHO, India office, New Delhi; 2009: 968-971.
5. Werner D. Where There Is No Doctor: a village health care handbook. Revised ed. California, USA. Hesperian Health Guides; 2011: 75-106.
6. Semwal J, Bakshi RK, Juyal R, Deepshikha, Vyas S, Kandpal SD. Study of knowledge and attitudes to first aid among school children of Doiwalablock, Dehradun. *Int J Community Med Public Health*. 2017;4:2934-8.
7. Mobarak AS, Afifi RM, Qulali A. First Aid Knowledge and Attitude of Secondary School Students in Saudi Arabia. *Health*. 2015;7:1366-78.
8. Hsiao M, Tsai B, Uk P, Jo H, Gomez M, Gollogly JG, et al. "What Do Kids Know": A Survey of 420 Grade 5 Students in Cambodia on Their Knowledge of Burn Prevention and First-Aid Treatment. *Burns*. 2007;33:347-51.
9. Deepak M, Nayak S. A study on knowledge on assessment of knowledge on practices regarding first aid measures among self-help groups in Mangalore with a view to develop information

- module. Nitte University J Health Sci. 2012;2(3):6871.
10. Van de Velde S, Heselmans A, Roex A, Vandekerckhove P, Ramaekers D, Aertgeerts B. 'Effectiveness of Nonresuscitative First Aid Training in Laypersons: A Systematic Review'. *Annals Emergency Med*. 2009;54(3):447-57.
 11. Khan A, Shaikh S, Shuaib F, Sattar A, Samani SA, Shabbir Q, et al. Knowledge attitude and practices of undergraduate students regarding first aid measures. *JPMMA*. 2010;60-8.
 12. Kapoor R, Vyas S, Mashru P, Mehta A, Mehta A, Mehta S, et al. Impact of Training on Knowledge and Attitude Regarding First Aid among Students of Schools of Ahmedabad. *Natl J Community Med*. 2017;8(7):380-4.
 13. Arli SK, Yildirim Z. The Effects of Basic First Aid Education on Teachers' Knowledge Level: A Pilot Study. *International J Caring Sci*. 2017;10(2):813-8.
 14. Mathew S, Salman P, Khurshid S, Luke AM. Awareness of First Aid Among Undergraduate Students in Ajman, UAE. *J Dental Med Sci*. 2016;15(6):30-8.
 15. Joseph N, Kumar GS, Babu Y, Nelliyanil M, Bhaskaran U. Knowledge of first aid skills among students of a medical college in Mangalore city of South India. *Ann Med Health Sci Res*. 2014;4:162-6.
 16. El magrabi NM, ElwardanyAly S, Khalaf SA. Impact of training program regarding first aid Knowledge and practices among preparatory schools' teachers at Assiut City. *J Nur Edu Practice*. 2017;7(12):89-97.

Cite this article as: Chandrachood MV, Acharya S. A study to assess the effectiveness of training on first aid among students of industrial training institute in tribal area of Thane district, Maharashtra. *Int J Community Med Public Health* 2019;6:1573-7.