



EFFECTIVENESS OF FIRST AID TRAINING AMONG HIGH SCHOOL STUDENTS IN RURAL GUNTUR: A PRE AND POST DESIGN

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ABSTRACT

Purpose of the Study: First aid is the initial care provided for an acute illness or injury. It is usually provided by a bystander who remains in close proximity to the victim. The main objective of the study is to evaluate the effectiveness of educational intervention on the first aid among high school students in rural Guntur. **Materials and Methods:** A total of 419, 7th, 8th and 9th standard students were given self-administered questionnaire for assessing their baseline knowledge about management of common injuries followed by educational intervention with a self-constructed teaching module. Post intervention evaluation of their knowledge acquisition was done after 15 days with same questionnaire. **Results:** The baseline knowledge on the management of common injuries was found to be insufficient among the school students. Less than half the students knew the management of common injuries like insect bite (22.6% in government school and 29% in private school), snake bite (39.1% in government school and 22.6% in private school) where the scores appreciably improved during post intervention. Chi square test and McNemars test was done to compare the pre and posttest scores regarding knowledge and attitude of the students about first aid, and there was a significant change in knowledge in post-test score compared to pre-test score. There is high effective impact on training program. **Conclusion:** Inculcating first-aid training in the school curriculum can be a good investment in ensuring proper and timely management of common injuries for both the school children as well as the community at large.

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INTRODUCTION

Henry Sigerist, the medical historian stated that “the people's health ought to be the concern of the people themselves. They must struggle for it and plan for it. The war against disease and for health cannot be fought by physicians alone. It is a people's war in which the entire population must be mobilized permanently”. Often, delay in providing proper medical care or lack of knowledge regarding treatment results in death of the injured which can be avoided by immediate resuscitation measures^[1]. First aid, as the name implies, is the first care given to the person/victim who has suddenly become ill or injured before the provision of advanced medical care^[2]. It can be provided by a bystander who is in close proximity to the victim who has suffered from the injury or the victim and need not be particularly the domain of medical personnel^[3].

The primary objective of first aid is to alleviate suffering, facilitate healing process and reduce damage. Administration of first aid requires simple techniques and minimal or no

equipment but can be potentially lifesaving in many instances. Whenever an accident occurs, people around the victim usually panic more than the victim himself which should not be the case. The First Aider should have a positive attitude and always be prepared to help the casualty^[4]. Hence, knowledge of first aid is important for every individual at every age, including school children. Schools are the favorable places where proper education on the first aid can be delivered efficiently due to the inherent ambience of the institution which makes them more amenable to any type of educational training.^[2] In their day to day life, school students often suffer from injuries like cuts, sprains, burns, insect bites, snake bites, dog bites, nosebleeds etc.^[5]. Students have the potential for changing the health scenario of the society if appropriately groomed and educated for healthful living^[6].

In India, school health services are available for primary schools (6- 11 years) but are limited for middle and secondary class students^[3&7]. Moreover school health programmes in India give less emphasis on first aid in the educational curriculum which is a major drawback. Contrary to this, first aid is a more frequently taught subject in the health curriculum of home schools in other countries^[5]. Therefore, this study was undertaken to train the high school students of class 7th, 8th and

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9th of a private and government school in rural Guntur on selected first aid measures of common injuries 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 with their relatives, friends and also students belonging to the lower classes will be high. The aim of the study was to evaluate the effectiveness of first aid training among school students in rural Guntur. The main objectives of the study were to assess the knowledge of high school students regarding selected first-aid measures of common injuries/illnesses, to impart education to the study population regarding correct first-aid practices and to determine the effectiveness of the education imparted in terms of difference in knowledge before and after the education.

MATERIALS AND METHODS

This school based interventional study was conducted in Zilla Parishad High school (government) and Siddhartha High School (private) in rural Guntur (A.P). About 419 students belonging to classes 7th, 8th and 9th were included in the study. Students of class 10th were intentionally excluded with an idea of not disturbing the academic curriculum of these students who were to appear for their board examinations shortly.

A self-administered semi-structured questionnaire was prepared in English and was translated into the local language (Telugu) keeping semantic equivalence. The face and content validity of the questionnaire was checked by experts in the department of Public Health dentistry in Sibar Institute of Dental Sciences, Guntur. The questionnaire was then backward translated into English by a bilingualist which was checked for conceptual equivalence. A pilot study was done among 25 students and the students were asked whether they could understand the whole content in the questionnaire. After confirming that the questionnaire is easily understandable by the students, the main study was conducted in duration of November to December-2017.

The questionnaire contains two sections:

Section (I) student's identification particulars of class and roll number along with socio-demographic particulars and

Section (II) comprising 14 closed ended questions in two domains, namely knowledge on first aid for common injuries (9 questions) and attitude regarding provision of first aid (5 questions).

Pre-test evaluation

Self-introduction about the investigator and information regarding nature of the study was explained to the students. Informed consent was taken from each student, and the pre-test self-administered questionnaire comprising both Section I and II was given to them after instructing all participants regarding the importance of providing accurate information. Students who were absent at baseline data collection and who were unwilling to participate in the study were excluded from the study.

Module for intervention

Analysis of their knowledge obtained from the pretest questionnaire was done and utilized for preparing the teaching module. It consisted of systematically organized information

on selected first aid measures such as management skills of minor cuts, sprain, burns, fracture, foreign body in the eye, nose bleeding, insect bite, snake bite, and dog bite with relevant pictures and diagrams. Demonstration regarding usage of items which are usually kept in the first aid box such as elastic bandage, tweezers, and essential drugs was done at the end of the session.

Method of intervention

The intervention was given by lecture, PowerPoint presentation and demonstration for 30 minutes, including 20 minutes of modular teaching by PowerPoint presentation and 10 minutes of demonstration of first aid box contents.

Posttest evaluation

Evaluation of the educational intervention program was assessed by conducting post-test using self-administered questionnaire comprising only Section II after 15 days.

Statistical 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 13 multiple choice questions.

Data was analysed using SPSS version 20 software (IBM Corp. Released 2011. IBM SPSS statistics for windows, Version 20.0. The difference in knowledge between private and government schools both before and after the intervention were measured using chi square test. McNemar's test was used to identify the changes in knowledge, pre and post intervention within both private and government schools. $P \leq 0.05$ was considered significant. Excluding the incomplete questionnaire the total questionnaire used for analysis was 336.

Ethical Consideration

The proposal for the study was approved by the Institutional Ethics Committee Of Sibar Institute Of Dental Sciences, Guntur. Informed consent was obtained from the Principal and class teachers of seventh, eighth and ninth grades of each of the schools.

RESULTS

Of 419 students, 143 are government school students and 276 belonged to private school. However only 115 and 231 students from government and private schools respectively were included in the final analysis as 28 students from government and 55 from private schools were either absent at baseline data collection or returned incompletely filled questionnaires, thus making the final sample to be 346.

As seen in table 1, in government school, out of 115 students, 34 (29.6%) students were 7th standard, 50 (43.4%) were 8th standard and 31 (27%) students belonged to 9th standard. There were 66 (57.4%) females and 49 (42.6%) males. Based on pre-interventional study, of all the students, 94 (81.7%) of them have heard of the term "first aid" and parents were the major source of information 59 (51.3%), followed by teachers 53 (46.1%), radio 44 (38.3%), books 40 (34.8%), friends 35 (30.4%) and relatives 17 (14.8%). Of them 97 (84.3%) of the students have reported encountering the individuals who were in need of first aid and 78 (67.8%) of the students have seen first aid being done to the victims.

Table 1 Differences in Pre and Post intervention responses in Private and Government schools

Question	Options	Government				P value	Private				P value
		Pre-Intervention N=221 %	Post-Intervention N=221 %				Pre-Intervention N=221 %	Post-Intervention N=221 %			
1)Did you hear about first aid? If yes, from where did you hear it?	Yes	94	81.7	115	100	.000*	202	91.4	221	100	.000*
	No	21	18.3	0	0		19	8.6	0	0	
	TV/Radio	44	38.3	38	33	.409	84	38	89	40.3	.626
	Parents	59	51.3	62	53.9	.692	112	50.7	127	57.5	.152
	Teachers	53	46.1	75	65.2	.004*	153	69.2	192	86.9	.000*
	Friends	35	30.4	48	41.7	.074	55	24.9	80	36.2	.010*
	Relatives	17	14.8	32	27.8	.016*	39	17.6	49	22.2	.234
2)Is first aid lesson included in your school subjects?	Yes	40	34.8	55	47.8	.045	96	43.4	111	50.2	.153
	No	83	72.2	103	89.6	.001*	147	66.5	176	79.6	.002*
3)Did you come across a person who is in need of first-aid?	Yes	32	27.8	12	10.4		74	33.5	45	20.4	
	No	97	84.3	108	93.9	.020*	176	79.6	188	85.1	.134
4)Did you see a person doing first aid?	Yes	18	15.7	7	6.1		45	20.4	33	14.9	
	No	78	67.8	96	83.5	.006*	146	66.1	178	80.5	.001*
5)Do you know about the contents in the first aid box?	Yes	37	32.2	19	16.5		75	33.9	43	19.5	
	No	62	53.9	10	93.9	.000*	93	42.1	219	99.1	.000*
6)Do you have a first aid kit?	Yes	53	46.1	7	6.1	.000*	128	57.9	2	0.9	.000*
	No	48	41.7	85	73.9	.000*	42	19	151	68.3	.000*
	School	67	58.3	30	26.1		179	81	70	22.7	
7)If you have a first aid kit, where will you keep it?	Home	25	21.7	11	9.6		20	9	20	9	
	Carry along with you	31	27	15	13	.000*	76	34.4	29	13.1	.000
	Dont know	5	4.3	87	75.7	.000*	18	8.1	166	75.1	.000
8) Do u know to manage a person with											
Cut injuries	Yes	54	47	94	81.7	.000*	104	47.1	185	84.1	.000*
	No	95	82.6	110	95.7	.001*	157	71	290	99.1	.000*
Burn injury	Yes	20	17.4	5	4.3		29	29	2	0.9	
	No	61	53	104	90.4	.000*	80	36.2	182	82.4	.000*
Sprain	Yes	54	47	94	81.7	.000*	104	47.1	185	84.1	.000*
	No	61	53	21	18.3	.000*	117	52.9	35	15.9	.000*
Fracture	Yes	27	23.5	92	80	.000*	43	19.5	173	78.3	.000*
	No	88	76.5	23	20		178	80.5	48	21.7	
Dog bite	Yes	46	40	97	84.3	.000*	66	29.9	16	72.4	.000*
	No	69	60	18	15.7		155	70.1	61	27.6	
Insect bite	Yes	26	22.6	91	79.1	.000*	64	29	163	73.8	.000*
	No	89	77.4	24	20.9		157	71	58	26.2	
Snake bite	Yes	45	39.1	100	87	.000*	50	22.6	178	80.5	.000*
	No	70	60.9	15	13		171	77.4	43	19.5	.000*
Nose bleeding	Yes	41	35.7	106	92.2	.000*	74	33.5	193	87.3	.000*
	No	73	63.5	9	7.8		147	66.5	28	12.7	.000*
Attitude regarding first aid											
9) Do you think learning first aid is important in life?	Yes	200	90.5	114	99.1	.098	200	90.5	218	98.6	.000*
	No	21	9.5	1	0.9		21	9.5	3	1.4	
10) Education of first aid in schools is essential?	Yes	204	92.3	114	99.1	.017*	204	92.3	219	99.1	.000*
	No	17	7.7	1	0.9		17	7.7	2	0.9	.000*
11) Do you think Learning first aid is difficult and complicated?	Yes	67	30.3	15	13		67	30.3	38	17.2	
	No	154	69.7	100	87	.000*	154	69.7	183	82.8	.001*
12) Do you think that doing first-aid and saving life is the responsibility of the medical professional only?	Yes	52	23.5	12	10.4		52	23.5	25	11.3	
	No	169	76.5	103	89.6	.000*	169	76.5	196	88.7	.001*
13)If I have adequate knowledge, I will perform the first aid to the people in need.	Yes	192	86.9	113	98.3		192	86.9	219	99.1	.000*
	No	29	13.1	2	1.7	.098	29	13.1	2	0.9	

McNemar's Test, P≤0.05 was considered significant

While evaluation pre and post intervention statistics in table 2, it is found that there is significant change regarding knowledge and attitude about first aid in post intervention evaluation when compared to pre intervention statistics in both government and private schools which indicates both the schools have participated actively in the study.

62(53.9%) of the students were aware of the contents in the first aid box and 48(41.7%) possess the first aid kit. When they were questioned that where should the first-aid box be kept, 25(21.7%) prefer having the first aid kit at school, 31(27%) prefer having it in home 5(4.3%) prefer carrying along with them and 54(47%) do not have the idea about where the first aid kit should be kept.

Regarding management of first aid injuries, majority of the students have the idea of treating cut injuries 95(82.6%) followed by burn injuries 61(53%) and sprain 54(47%). Less than half of the students have no idea regarding management of fracture, snake bite and nose bleeding.

Table 2 Differences in responses between private and government schools at different time points

Question		Pre-Intervention				P value	Post-Intervention				P value
		Government N=115 %		Private N=115 %			Government N=115%		Private		
1)Did you hear about first aid?	Yes	94	81.7	202	91.4		115	100	221	100	
	No	21	18.3	19	8.6	.009*	0	0	0	0	--
If yes, from where did you hear it?	TV/Radio	44	38.3	84	38	.964	38	33	89	40.3	.195
	Parents	59	51.3	112	50.7	.913	62	53.9	127	57.5	.533
	Teachers	53	46.1	153	69.2	.000*	75	65.2	192	86.9	.000*
	Friends	35	30.4	55	24.9	.276	48	41.7	80	36.2	.321
	Relatives	17	14.8	39	17.6	.504	32	27.8	49	22.2	.250
	Books	40	34.8	96	43.4	.125	55	47.8	111	50.2	.676
2)Is first aid lesson included in your school subjects?	Yes	83	72.2	147	66.5	.290	103	89.6	176	79.6	.021
	No	32	27.8	74	33.5		12	10.4	45	20.4	
3)Did you come across a Person who is in need of first-aid?	Yes	97	84.3	176	79.6	.294	108	93.9	188	85.1	.018*
	No	18	15.7	45	20.4		7	6.1	33	14.9	
4)Did you see a person Doing first aid?	Yes	78	67.8	146	66.1	.745	96	83.5	178	80.5	.510
	No	37	32.2	75	33.9		19	16.5	43	19.5	
5)Do you know about the contents in the first aid box?	Yes	62	53.9	93	42.1	.039*	108	93.9	219	99.1	
	No	53	46.1	128	57.9		7	6.1	2	0.9	.005*
6)Do you have a first aid kit?	Yes	48	41.7	42	19		85	73.9	151	68.3	.247
	No	67	58.3	179	81	.000*	30	26.1	70	31.7	
7)If you have a first aid kit, where will you keep it?	School	25	21.7	20	9	.007*	11	9.6	20	9	
	Home	31	27	76	34.4		15	13	29	13.1	
	Carry along with You	5	4.3	18	8.1		87	75.7	166	75.1	.955
	Dont know	54	47	107	48.4		2	1.7	6	2.7	
8) Do u know to manage a person with Cut injuries	Yes	95	82.6	157	71	.020	110	95.7	219	99.1	
	No	20	17.4	64	29		5	4.3	2	0.9	.030
Burn injury	Yes	61	53	80	36.2		104	90.4	182	82.4	
	No	54	47	141	63.8	.003*	11	9.6	39	17.6	.048
Sprain	Yes	54	47	104	47.1	.986	94	81.7	185	84.1	.584
	No	61	53	117	52.9		21	18.3	35	15.9	
Fracture	Yes	27	23.5	43	19.5		92	80	173	78.3	.714
	No	88	76.5	178	80.5	.389	23	20	48	21.7	
Dog bite	Yes	46	40	66	29.9	.061	97	84.3	160	72.4	.014
	No	69	60	155	70.1		18	15.7	61	27.6	
Insect bite	Yes	26	22.6	64	29	.212	91	79.1	163	73.8	.276
	No	89	77.4	157	71		24	20.9	58	26.2	
Snake bite	Yes	45	39.1	50	22.6	.001*	100	87	178	0.5	
	No	70	60.9	171	77.4		15	13	43	19.5	.140
Nose bleeding	Yes	42	36.5	74	33.5	.344	106	92.2	193	87.3	.178
	No	73	63.5	147	66.5		9	7.8	28	12.7	
Attitude regarding first aid											
9) Do you think learning first aid is important in life?	Yes	110	95.7	200	90.5	.093	114	99.1	218	98.6	.696
	No	5	4.3	21	9.5		1	0.9	3	1.4	
10) Education of first aid in schools is essential	Yes	107	93	204	92.3	.807	114	99.1	219	99.1	.974
	No	8	7	17	7.7		1	0.9	2	0.9	
11) Do you think learning first aid is difficult and complicated?	Yes	52	45.2	67	30.3	.007*	15	13	38	17.2	
	No	63	4.8	154	69.7		100	87	183	82.8	.000*
12) Do you think that doing first-aid and saving life is the responsibility of the medical professional only?	Yes	50	43.5	52	23.5	.000*	12	10.4	25	11.3	
	No	65	56.5	169	76.5		103	89.6	196	88.7	.000*
13)If I have adequate knowledge, I will perform the first aid to the people in need	Yes	96	83.5	192	86.9	.398	113	98.3	213	99.1	.504
	No	19	16.5	29	13.1%		2	1.7	2	0.9	

Pearson Chi Square Test, P≤0.05 was considered significant

Many students have reported that they don't know the first aid management of the victim with dog bite 27 (23.5%) and insect bite 26(22.6%). Regarding attitude of the students 110(95.7%) of the students reported that learning about first aid is important and 96(83.5%) of the students have reported that they will do first aid if they are adequately educated about it. There was major difference regarding knowledge of first aid treatment of minor injuries post-intervention with maximum students reporting that they have known the management of cut injuries 110(95.7%) followed by nose bleeding 106 (92.2%) burn injuries 104(90.4%), snake bite, dog bite, sprain, fracture and insect bite Five questions were asked to assess the attitude of students regarding the application of first aid, and significant change was observed during post intervention assessment.

In private school, out of 231 students, 77(33.5%) students were 7th standard 84(36.5%) were 8th standard and 69(30%) students belonged to 9th standard. Of them 151(65.7%) are males and 79(34.3%) are females. During pre-intervention, majority of the students 202(91.4%) reported having heard the term "first aid" and teachers 153(69.2%) and parents 112(50.7%) were identified as the main source of information followed by books 96(43.4%), TV84 (38%), friends 55(24.9%) and relatives 79(13.6%).Of them, 66.5% have mentioned that the first aid chapter was included in their school subjects and 73(33.5%) denied having any such chapter.176 (79.6%) students have encountered the victims who were in need of first aid and 146(66.1%) have mentioned that they have seen first aid done to the injured. Less than half the students 93(42.1%) reported that they knew about the contents in the first aid box and very few students 42(19%) have the first aid kit. When asked about where they would keep the first aid kit if they have one, 20(9%) of them preferred to keep them in school where as 76(34.4%) preferred to put it at home 18(8.1%) mentioned that they will carry along with them and 107(48.4%) did not have clear idea about where the first aid box should be placed. Regarding knowledge about the management of minor injuries more than half of the students reported that they knew about first aid treatment of cut injuries 157(71%) and less than half the students knew about the management of sprain 104(47.1%), burn injuries 80 (36.2%), nose bleeding 74(33.5%), dog bite 66(29.9%), insect bite 64(29%) .Very few students knew about the first aid treatment of snake bite 50 (22.6%) and fracture 43(19.5%). After post intervention statistics evaluation it is found that there is a significant change regarding knowledge of first aid treatment. Majority of the students knew the first aid treatment of all minor injuries and more than half of the students have purchased the first aid kit. Regarding attitude there is a significant change after post intervention.

DISCUSSION

This study was conducted among the students of higher classes in view of the fact that these students have reached a certain stage of maturity, they would be able to grab the knowledge quickly and the conduction of post education assessment after 15 days provided an opportunity to evaluate the power of retention of the knowledge among the students. The present study revealed that majority of the students in government school 94(81.7%) and all the students of the private school had heard of the name first aid which were similar to the findings of Priyangika and Hettiarachhi in a study conducted in Sri Lanka^[2]. In study conducted by Mobarak *et al* in Saudi Arabia^[8] television and parents were

the main source of information and where as in this study where as in this study teachers and parents were the main source of information. More than half of the students during pre-intervention (84.3% in government school and 79.6% in private school) have encountered the persons who are in need of first aid treatment. Only about half the students (53.9% in government school and 42.1% in private school) reported that they knew about the basic contents in the first aid box whereas after post interventional assessment majority of the students (93.9%) in government school and 99.1% in private school) got familiar with the contents in the first aid kit.

During pre-intervention, majority of the people did not possess first aid box with them whereas after post-intervention education more than half of the students in both the schools purchased the basic first aid kit which elucidates their interest in knowledge regarding the first aid and also their positive attitude to help the victim. Many of the students in both government and private schools knew the first-aid treatment of cut injuries during pre-test which may be because this is the age where the students play games and may have got injured with cut injuries or they may have seen their friends getting injured and have also seen the treatment regarding this. Only 80(36.2%) of the students in private school knew the treatment of burns which is similar to the study conducted by Ghosh *et al* in a group of school children of Jamshedpur where the students quoted poor knowledge regarding management of burns^[9]. Where as after post intervention all the students knew the management of burns which is contrary to same study that reported poor post training knowledge acquired by students^[9] and similar to the study conducted by Dr. Varsha.S.Shinde and Devyani.S.Shinde that showed significant improvement between pre and post test scores^[6]. The knowledge regarding insect bite is poor during pre-intervention (22.6% in government school and 29% in private school) which were similar to the findings in the study conducted by Dr. Aparajita Dasgupta, Dr. Lina Bandyopadhyay in a rural area a rural area of West Bengal^[5]. More than half of the students in both the schools knew the treatment of burns and sprain. Majority of the students in both the schools did not know the management of other minor injuries like snake bite and dog bite which are similar to the results obtained in the study conducted by Singh AJ, Kaur A in 9th class school children in Chandigarh and Haryana^[10]. After post-intervention assessment majority of the students in both government and private schools had shown significant change revealing that majority of the students knew the treatment of all minor injuries. The results were consistent with the findings of the study in Tamil Nadu^[11] 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 conducted by Sonu G and Amarjit S namely "Comparative Impact of Two Training Packages on Awareness and Practices of First Aid for Injuries and Common Illnesses among High School Students in India"^[12] showed significant improvement in results following training. McNemar's test showed statistically significant difference in the pre and the post education scores. During pre-intervention many students have reported that learning first aid in their life is essential and they preferred to learn about it in their schooling itself. However, it is encouraging that younger students have a more positive view towards importance of first aid. About half of the students in the government school

reported that learning about first aid is difficult and complicated whereas after post intervention majority of the students agreed that it is easily understandable and can be performed without much difficulty. During pre-intervention about half the students in both the schools believed that first aid could only be provided by doctors and not by common people which is contrary to the study conducted by Dr. Aparajita Dasgupta, Dr. Lina Bandyopadhyay on school students of rural area in West Bengal where majority of the students reported that it should be provided only by doctors^[5]. But in post intervention it was elucidated that majority of the students were prepared to provide first aid to the victim in need.

Since school children are more prone to injuries, first aid becomes not only a subject to theoretically learn but also an avenue for needful basic health care provision in practice. Keeping this in view, dentists can play crucial role in preparing the school children for first aid provision associated with common injuries. Research has been done showing that first aid education should start in the early ages^[13].

CONCLUSION

In conclusion, students of two schools had inadequate knowledge on management of minor injuries by first aid. However the attitudes towards the apparent need for knowledge regarding first aid and the willingness to receive training on first aid were encouraging. The present study elucidated a requirement for knowledge of first aid among school students and reveals that first aid education would be of immense use if it is introduced at schooling itself. They must be encouraged to take up safety measures and practice first aid. This would enhance their skills toward emergency management of injuries. The necessity of keeping first aid box handy containing suggested equipment and medicines with them would help saving victim's life in during crisis. And the most important proposal given to the school authority should be to have a first-aid box of their own, with the necessary equipment and medicines at ready disposal.

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