Knowledge and Attitudes on First Aid among Advanced Level Students in Gampaha Educational Zone, Sri Lanka

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Abstract

First aid is the initial care given in an emer-gency, to protect life and to prevent worsening of the condition of the victims, until they are undertaken by a pro-fessional medical person. This research was done to assess the knowledge, attitudes and practices on first aid among advanced level students in government schools in Gampaha educational zone. A descriptive cross-sectional study using a pre-tested questionnaire was self-administered to collect the data among grade 12 students (n=510) in five randomly selected schools. Chi-square test was used to assess the associations and a p-value <0.05 was considered as significant. Stude-nt's mean first aid knowledge was 57.4±13.5 while 1% (n=5) were categorized as having "inadequate know-ledge", 30.6% (n=156), 61.4% (n=313) and 7.1% (n=36) were having "moderate", "good" and "excellent" knowledge respectively. Only 16.9% (n=86) of the students were previously trained in first aid. Positive attitudes towards first aid were found and 98.8% students (n=504) believed it is essential to have first aid knowledge.

A weak correlation was found between the knowledge and attitudes (r=0.134). Biology stream students were significantly more knowledgeable than others (χ^2=31.7, p<0.001). A significantly higher knowledge score was found in the students who had followed health science in their O/L (χ^2=12.4, p=0.006). However, gender and previous training on first aid had no significant relationship with their knowledge (p>0.05). Addition of first aid as a part of the school curriculum and improving the standards of the existing first aid training programs is recommended.

Keywords: First Aid; School Students; Knowledge; Attitudes

1. Introduction

First aid is the immediate care provided to a victim of injury or sudden illness in emergencies until they are undertaken by a professional medical person [1]. The person providing first aid should be able to assess the injured as soon as possible and give basic first aid correctly and then contacts the proper medical facilities. In 1990, there were more than 350 million new cases of injuries recorded globally and it has increased to 520 million new cases by 2017 [2]. Nevertheless injuries are causing health loss worldwide, the mortality rate has declined by 2017 from 1079 to 738 per 100 000 individuals [2]. In 2013, 973 million people encountered with injuries requiring medical attention. Out of which, car crashes (29%), self-harm (17.6%), falls (11.6%) and violence (8.5%) considered as the most significant. Over the last ten years in Sri Lanka, traumatic injuries are the main cause of hospitalization, and more than 1 million people were hospitalized due to injuries in 2016. In 2016, with 1675 hospital deaths, it ranked number 10 in terms of mortality [3]. A study on injury occurrence among residents in a semi-urban area of Sri Lanka,

reported 17.7 per 1000 population over six months, considering all age groups. Falling from a height, road accidents, animal bites, sports injuries, cuts and abrasions, poisoning, and burns were reported the common injuries [4]. When considering school-based injuries or accidents, the majority occur during 'free periods', within the classroom and are minor injuries [5].

Knowledge on first aid is important for everyone [5]. A study conducted at Monsul University, Iraq on first aid knowledge using a "true/false" questionnaire (n=124) among students from a selected school revealed that the overall knowledge is 46%. A majority (n=57, 96%) of the students emphasize the importance of proper training on first aid activities [6]. A similar study done in Turkey among students (n=134) of a Vocational School stated that 65.7% (n=88) of the students were lacking formal first aid training. However, 82.8% (n=110) of the students knew the pulse rate of an adult while 56.7% (n=75) of the students knew the respiratory rate of an adult. About a quarter of the sample (n=35, 26.1%) knew that inducing vomiting if a patient has ingested poison using gasoline, bleaching liquid or similar substances should not be practiced [7]. Lack of local research makes it imperative to conduct large-scale research to assess knowledge, attitudes and practices on first aid to develop evidence-based interventions.

2. Methods
2.1 Study aim
This study was conducted to assess knowledge and attitudes on first aid among advanced level students in government schools in Gampaha educational zone.

2.2 Study setting
A Descriptive cross-sectional study was conducted in selected Government schools in Gampaha educational

zone. The total government schools in Gampaha educational zone is 48, out of which only 14 schools had classes up to advanced level.

2.3 Study participants

Grade 12 and 13 students of both sexes (age range = 18-19 years) in government schools in Gampaha educational zone were the study participants.

2.4 Sample size calculation

Sample size determination was done through the following equation [8] ; $n = Z^2P (1-P) /d^2$; Z= Critical value of specified confidence level, for this study the confidence level set at 95% and thus the critical value is 1.96. As there are no studies done in Sri Lanka to assess the knowledge, attitudes or practice levels regarding the first aid at the community level, the prevalence of poor knowledge was considered as 50% to maximize the sample size. Applying the values to the equation; $n = (1.96 \times 1.96 \times 50 \times 50) / 5 \times 5 = 384$; A non-response rate of 40% was considered. Therefore, the final sample size was increased to 540. The sample size achieved was 510.

2.5 Sampling techniques

The list of schools with advanced level students (14) was obtained from the Western Province, Education Department and rearranged according to the alphabetical order. Based on the logistical feasibility it was decided to select five (5) schools from the prepared sampling frame randomly. Accordingly, five (5) schools were selected based on computer-generated random numbers. The total sample size was divided equally among the selected schools.

2.6 Study instrument

A self-administered questionnaire was used to collect

data. It was developed in the English language and then translated to Sinhala and Tamil languages. The face and content validity was assessed by a panel of experts. The questionnaire contained questions on; socio-demographic details, knowledge and attitudes on first aid. Pre-testing of the questionnaire was done among A/L students in a school which was not selected for the main study and some adjustments were made in the wording of the questionnaire. The princpal investigator collected the data after explaining the details of the study, informed written consent was obtained.

2.7 Statistical analysis

Primary data were entered to Microsoft Excel 2007 and exported to Statistical Package of Social Science for windows version 21 (SPSS Inc., Chicago, IL, USA). The level of knowledge and attitudes were considered as dependent variables. Numerical variables were described using mean and standard deviation. Categorical variables were expressed as percentages. The bivariate analysis was done using chi-square test. To calculate a total first aid knowledge score, one (1) mark was given to each correct answer and zero (0) marks were given for each wrong answer in the knowledge section. The total scores were then converted to percentages and were graded according to a scale where a score of ≤24 was considered as "Inadequate knowledge", scores between 25 to 49 was classified as "Moderate knowledge", scores between 50 and 74 was considered as "Good knowledge" and scores≥75 were grouped as "Excellent knowledge". A p-value < 0.05 was considered as significant.

2.8 Administrative and ethical clearance

Ethical clearance was obtained from National Institute of Health Sciences, Kalutara, Sri Lanka (ERC clearance No: NIHS/REC/17/05R). Administrative

clearance was obtained from the Director, Department of Education - Western Province and principals of respective schools selected.

3. Results

3.1 Socio-demographic information of students

The response rate was 94.4% and the final sample size achieved was 510. In the study sample, 185 (36.3%) were males and all students were aged between 17 (26.7%) to 18 (74.1%) (Table 1). More than a quarter of the students (n= 144, 28.3%), were studying in biology stream while 122 (23.9%) were in commerce stream, 144 (28.3%) were in mathematics stream and the rest were studying in the arts stream. Nearly half of the students (n=254, 49.8%) followed the health science subject during their ordinary level studies (O/L) and only 16.9% (n=86) of the students were previously trained on first aid (Table 1).

3.2 Knowledge on first aid

The mean knowledge score was 57.4 (SD=13.5) where the maximum was 89 and the minimum was 16. According to the first aid knowledge grading, 1% (n=5) were categorized as having "inadequate knowledge", 30.6% (n=156) had "moderate knowledge", 61.4% (n=313) were having "good knowledge" and 7.1% (n=36) were categorized as having "excellent knowledge" (Table 2). The majority (n=486, 95.3%) were able to define "first aid" and 56.9% (n=290) knew first steps in managing a first aid situation. When considering the first aid knowledge for given emergencies, the majority was correct in following situations; 62.9% (n=321) knew the correct first aid for deep bleeding cut on the palm, 81.4% (n=415) were able to provide first aid for broken glass piece sticking in the leg, 89.2% (n=455) students were aware of first aid steps for electric shocks, 88.2% (n=450) knew correct first aid for snake bites before

hospitalization and 87.6% (n=447) knew how to check for breathing in a person. In contrast, the majority was wrong in the following situations; 66.1% (n=337) were not aware of first aid to stop nasal bleeding, 74.3% (n=379) were unable to give the correct answer for first aid in sprains/strains, 72.4% (n=369) students were not aware of the correct first aid procedure for accidental ingestion of poisons and 82.7% (n=422) were not aware of correct CPR ratio. In following situations nearly half of the population were having the awareness; the first step in managing an emergency, first-aid for bone fracture in leg, first aid procedure for a choking person, first aid for burn injuries, first aid for seizures, steps in managing a heart attack and importance of CPR. More than three fourths of the sample (n=388, 76.1%) knew the short code (1990) number to contact "Suwa Seriya" free ambulance service (Table 3).

3.3 Attitudes on first aid

The overall attitudes regarding first aid were positive and most of the students (n=504, 98.8%) believed it is essential to have first aid knowledge. Their willingness to give first aid in the following emergencies was high; heart attacks, drowning, severe bleeding, and road traffic accidents (Table 4). The common reasons to hesitate to provide first aid assistance for a victim of road traffic accident were lack of knowledge in first aid (n=202, 39.6%), legal consequences (n=176, 34.5%), and fear of road traffic accidents (n=44, 8.6%). Nearly 20% (n=108) had a phobia of seeing blood (Table 4).

3.4 Correlation of first aid knowledge with attitudes

There was only a slight correlation (r=0.134, p=0.003) between knowledge and attitudes indicating almost no relationship between knowledge and attitudes on first

aid.

3.5 Factors associated with knowledge

A statistically significant association was seen between first aid knowledge and advanced level stream (χ^2=15.26, p<0.001; Table 5) where knowledge of students studying in the biology stream was higher than others. The students who had followed health science during their O/L studies had a significantly higher knowledge score when compared to others (χ^2=12.4, p=0.006; Table 5). However, previous training on first aid had no significant relationship with the first aid knowledge (χ^2=7.2, p=0.064; Table 5). No statistical significance was found between first aid knowledge and gender (χ^2=3.8, p=0.284; Table 5).

Characteristics	Number of students (N=510)	Percentage (%)
Gender		
Male	185	36.3
Female	325	63.7
Age (years)		
16	4	0.8
17	126	24.7
18	378	74.1
19	2	0.4
Ethnicity		
Sinhala	510	100
Religion		
Buddhism	508	99.6
Catholic	2	0.4
A/L stream		
Biology stream	144	28.2
Commerce stream	122	23.9
Mathematics stream	144	28.2
Art stream	100	19.6
Health science subject for O/L		
Have followed	254	49.8
Not followed	256	50.2
First aid training		
Trained	86	16.9
Not trained	424	83.1

Table 1: Socio-demographic and education-related information of the respondents.

Knowledge grading	Number of students (N=510)	Percentage (%)
Inadequate (≤24%)	5	1.0
Moderate (25-49%)	156	30.6
Good (50-74%)	313	61.4
Excellent (≥75%)	36	7.1

Table 2: Students first aid knowledge according to the grading.

Variable	Correct answers		Wrong answers	
	N=510	Percentage (%)	N=510	Percentage (%)
Define first aid	486	95.3	24	4.7
First step in a first aid situation	290	56.9	220	43.1
Bleeding cut on the palm	321	62.9	189	37.1
Nose bleeding	173	33.9	337	66.1
Glass sticking in the leg	415	81.4	95	18.6
First aid for a sprain or strain	131	25.7	379	74.3
Fracture in leg	241	47.3	269	52.7
First aid for choking	264	51.8	246	48.2
First aid for burning	292	57.3	218	42.7
First aid for drinking poison	141	27.6	369	72.4
First aid for seizures	210	41.2	300	58.8
First aid for electrical shock	455	89.2	55	10.8
First aid for snake bite	450	88.2	60	11.8
Managing heart attack situation	238	46.7	272	53.3
Checking for breathing on victim	447	87.6	63	12.4
What should commence if not breathing	272	53.3	238	46.7
Correct CPR ratio	88	17.3	422	82.7
Importance of CPR	263	51.6	247	48.4
Call number of free ambulance service	388	76.1	122	23.9

Table 3: Knowledge score of the respondents.

Statement	Extremely disagree (%)	Disagree (%)	Agree (%)	Extremely agree (%)
Do you think is it essential to have first aid knowledge	-	1.2	26.3	72.5
Do you think is it essential to have a first aid training to provide first aid assistance at an emergency?	0.8	4.4	50.0	44.1

Do you think is it essential to have first aid box to give first aid for some one?	10.0	53.1	29.8	6.3
Do you think you will help someone who is having a heart attack?	4.3	30.6	39.0	25.3
Do you think you will help someone who has drowned in a river?	0.8	15.9	55.3	27.3
Do you think you will help someone with a severe bleeding wound?	2.4	13.7	46.3	36.9
Do you think you will provide first aid assistance to a victim of an accident on the road?	1.6	17.5	49.8	28.8
Do you think you have a phobia to see others blood?	45.9	32.2	19.2	2.0

Table 4: Attitudes towards first aid.

Variable	IA/M	G/E	Statistical association	
	n (%)	n (%)	χ² value	p value
Gender				
Male	52 (28.1)	133 (71.9)	3.8	0.284
Female	109 (33.5)	216 (66.5)		
A/L stream				
Non Biology subjects	134 (36.6)	232 (63.4)	15.26	<0.0001
Biology	27 (18.8)	117 (81.3)		
O/L health science				
Followed	71 (28.0)	183 (72.0)	12.4	0.006
Not followed	90 (35.2)	166 (64.8)		
First aid training				
Trained	36 (41.9)	50 (58.1)	7.2	0.064
Not trained	125 (29.5)	299 (70.5)		

(IA/M- inadequate and moderate) (G/E- good and excellent)

Table 5: Associations of socio-demographic factors and first aid knowledge

4. Discussion

The study shows overall fair knowledge and positive attitudes towards first aid among advanced level students in Gampaha educational zone. More than half of the students were having a good knowledge while 7.1% were excellent in their first-aid knowledge. In contrast, a study done in Dehradun, India among grade 9 to 12 students showed that 33.3% had only a partial knowledge while only 23.1% had adequate knowledge on first aid [9]. Another study conducted in Pondi-

cherry, India among grade 9 students shows that the majority (76.7%) have inadequate knowledge with only 23.3% having moderate knowledge on first aid [10]. A study in Telugana, India among undergraduate students showed that only 38% had inadequate knowledge [11].

In some specific first aid situations, students showed poor knowledge, such as nasal bleeding, sprain/strains, first aid for ingestion of poisons and correct CPR ratio. These observations were inconsistent with Semwal *et al.,* where it shows that nearly 99% of the students don't know first aid for nasal bleeding and sprain /strains [9]. In this study for the situation of accidental ingestion of poisons; 42.4% selected the option of "encourage the person to vomit" and 29.6% selected the "giving coconut milk" option. Both statements are wrong first aid measures. In Sri Lankan rural society, giving coconut milk for the cases of oral ingestion of poison is very popular as revealed in a study done in Sri Lanka about plant and kerosene oil poisoning among children, where 21.7% parents have practised forceful ingestion of coconut milk as a first-aid measure [12]. This clearly shows that some Sri Lankans still have a misconception regarding first-aid practices which could even lead to fatal outcomes [13]. In the above study, only 17.3% of the students knew the correct CPR ratio. In a similar study done in Sri Lanka by Priyangika *et al.*, in 2015 among senior school prefects in Galle education zone, only 26% of students knew the correct CPR ratio and those who knew the correct ratio was previously trained on first aid. The main reason for poor knowledge recorded in the current study is because the majority of the students (83.1%) had not received any formal training on first aid. A study done in Turkey by Metin and Mutlu in 2010 among university students shows that

53% were aware of the correct CPR ratio which is a comparatively high figure.

In the present study the overall attitudes towards first aid were positive (77.1%). A similar pattern was seen in a study done in New Zealand [14]. In this study, 95% of the students believed it is essential to have first aid knowledge with them however the knowledge and the attitudes were not significantly correlated (r =0.134). In another study done in Iraq by Makhlef, 2013 among university students, 96% of the respondents stated it's necessary to learn first aid [6]. Students in the current study showed a high willingness to provide first aid assistance for emergencies. A similar scenario is seen in other studies too [5, 15]. However, in certain instances, people are hesitant to provide first aid assistance, for instance, road traffic accidents. The reasons for such hesitations were lack of knowledge in first aid (39.6%) and potential, legal consequences (34.5%). A study done in India by Patidar and Sharma in 2014 among school students on basic life support further illustrates the fear for legal actions leading to hesitancy in becoming a first aid provider [16]. Similar findings are reported in a study done in North Carolina among high school students, where legal issues and fear of infections are the main reasons for not intervening to provide first aid [17]. The evidence from this study indicates that a student's educational background influences their first aid knowledge with those studying in biology stream for the advanced level examinations and students who have studied health science during their O/Ls having a better first aid knowledge. However, previous training in first aid did not influence their first aid knowledge. Similarly, this is noted in a nationwide survey conducted in Norway where most of the population were trained in first aid, but their theoretical first aid

knowledge was poor than expected [15]. Therefore merely conducting training programmes on first aid is inadequate to improve and maintain the level of knowledge in the long run. A pilot study done in Norway suggests first aid education in preschools has a better outcome when the application of basic first aid for given situations is considered [18]. Therefore the addition of first aid education as a practical subject for the school curriculum for all grades will lead to better outcomes in terms of first aid knowledge among school students. Further studies should be undertaken to assess the practical skills of students, as the current study mainly focused on the assessment of the theory knowledge.

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Conflict of Interests

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