

## Impact of Educational Program about Rabies on Knowledge, Attitudes and Practices of School Children

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**Abstract:** Rabies is an acute highly fatal infectious disease affecting all warm blooded animals and man. It is usually transmitted through biting of rabid animals to healthy one or man, where the causative virus is often present in the saliva of the victim. Once infected and left untreated, this disease is 100% fatal. The aim of this study is to evaluate the effect of rabies educational program on knowledge, attitudes and practices of school children. Quasi - experimental design (one group pre / post-test) was utilized in the current study. The study was conducted in governmental preparatory school "Al-Shahied Mohamed Farouk Wahdan School" at Giza governorate. A total sample of 100 preparatory school students was included in the study. Two classes were chosen randomly out of school classes. Each class included 50 students. One tool was developed by the researchers; A Structured interviewing questionnaire for assessment of students' knowledge, attitudes and practices regarding rabies, which included four parts:-1<sup>st</sup> part: includes demographic characteristics of the student such as age, gender, school years, parent level of educations and place residence. 2<sup>nd</sup> part: includes ten questions related to assessment of students' knowledge about rabies. 3<sup>rd</sup> part: includes seven questions related to assessment of students' attitude toward rabies. 4<sup>th</sup> part: includes five questions related to students' practice of rabies and first aid measures. From the obtained results, it was found that, there was a significant difference in the mean score of knowledge, attitude and practice of students regarding rabies before and after implementation of the program. There was also a significant relation between knowledge and practices of students regarding rabies. It was concluded that, the educational program had positive impact on school children's knowledge, attitude and practices regarding rabies. The study recommended dissemination of the program to school students and to the public through mass media to increase their knowledge; improve attitude and practices regarding rabies and its preventive measures. In addition to introducing rabies' knowledge, correct practices and first aid measures in school students' curriculum.

**Key words:** Educational Program • Rabies • Knowledge • Attitude • Practice • School Children.

### INTRODUCTION

The word rabies originates from the Latin word *rabere*. *Rabere* contributes to rage or rave, which means to do violence [1] Rabies was present in Egypt before 2300 B.C and also in ancient Greece [2]. Rabies ranked 12<sup>th</sup> on the WHO list of major killer diseases [3] and it is under OIE (Office International des Epizootics) category of multiple species diseases, infections and [4]. The etiologic agent of this disease is the rabies virus belonging to the genus *Lyssa* virus and family *Rhabdoviridae* [5] Rabies is one of the most serious zoonotic diseases. Once the clinical signs developed, it is almost 100% fatal disease [6, 7].

People get rabies from the bite of an infected animal. Researchers estimated that 30,000 to 70,000 deaths are attributed to rabies each year; roughly 40% of them are children. In developed countries, domestic animals have only been responsible for about 10% of cases of rabies transmission [8]. Rabies is most common in children than in adults; it is more common among boys than girls at school age. According to global estimations, 60,000 deaths occur each year in the world, among which 24,000 deaths in Africa, 50% of these mortalities are children under 15 years of age [9].

Rabies can be transmitted from rabid animal through infective saliva when it comes in contact with an open wound, a scratch or skin abrasion, or a mucous membrane

and also, through licks from infected animals in open wounds of humans. In domestic animals, the incubation period is 3-12 weeks but it can range from several days to months, rarely exceeding 6 months [10]. Clinical manifestations of the disease appear when the virus migrates from the bite site to the central nervous system. The duration of this process is highly variable depending on several factors including the distance from the bite site to the brain. The virus then spreads from the bite wound site by using the peripheral nervous system and grows in different body organs.

Symptoms generally take from 20 to 60 days to appear after coming in contact with rabies virus, but this period can vary from several days to years. There is often discomfort or pain at the bite site. Symptoms may be flu-like and include fever, headache and weakness. As the disease progresses, the infected person may experience increased difficulty in swallowing, excessive drooling, muscle spasms and unusual behavior. Once a person begins to show signs of the disease, survival is rare. [11-13]. Rabies vaccine is usually given after exposure to a possibly rabid mammal. The combination of pre-exposure immunization followed by post-exposure boosting has proved to be 100% effective [14].

Fewer dogs are vaccinated against rabies and more dogs are allowed to move freely in the slum than in the urban areas. Slum areas should therefore be given priority for the implementation of rabies control programs. Children are by nature, very curious, small in size and often play with dogs not realizing the danger involved [15, 16]. This frequently leads to severe bites in areas that are highly innervated and in the upper extremities of the body. The inference is that rabies transmission is faster because of the proximity of these sites to the central nervous system [17].

Education programs are considered as practical tools for rabies prevention and since children are a high-risk group, there is the need to target them for this purpose [16]. So, it is important to develop a well-educated population in regard to rabies risks and management of this disease. Currently, rare published studies have conducted to improve the knowledge, attitudes and practices of rabies prevention in the community and especially among school children as they are mostly prone to animal bites [18].

Poor public health awareness regarding rabies prevention and management is documented in researches [14, 18]. Understanding populations' perceptions of causes, modes of transmission, symptoms, treatment and

possible first aid measures of rabies, is an important step towards developing strategies for controlling the disease and implementing planned programs in the future. Ensuring community awareness of rabies and responsible behavior of pet owners, are key components for its prevention [8, 19]. So, it is important role of the community health nurses to develop educational programs for school children to improve their knowledge, attitude and practice (KAP) regarding rabies. In addition to providing people with teaching about : vaccinations offered to both human and dogs, compliance with pet vaccination, responsible pet ownership, first aid measures in case of animals' bite and wound bite management [20, 21].

In Egypt, there are little researches directed toward school children regarding rabies. It had been observed that school children lack sufficient knowledge about rabies, they have poor attitude regarding rabies and lack proper practices and immediate first aid measures in dealing with rabid persons. They are in need for equipping them with the information that improves their knowledge, attitude and practices toward rabies. So, the present study aimed to evaluate the effect of rabies' educational program on knowledge, attitudes and practices of school children.

## **MATERIALS AND METHODS**

### **Research Hypotheses**

**H.1:** Mean knowledge score of school children after implementation of the rabies program, will be higher than before.

**H.2:** Mean attitude score of school children after implementation of the rabies program, will be higher than before.

**H.3:** Mean practice score of school children after implementation of the rabies program, will be higher than before.

**Research Design:** Quasi-experimental design (one group pre / post-test) was utilized in the current study. One group (pre / post-test) design is one type of quasi-experimental design, which is used by researchers when only one group is available for study. Data are collected two times: before and one month after implementation of the program on one group of subjects [22].

**Setting of Study:** The study was conducted in governmental preparatory school "Al-Shahied Mohamed Farouk Wahdan School" at Giza governorate. The school is located in Hassan Hamdy area, Bulaq Eldakror educational directorate, Giza governorate. It was chosen because it is a big school and it was observed by the researchers that many street dogs were moving freely all the time, which constitute a great threat to students attending this school. The school consisted of 3 floors and 27 classrooms, 9 of them for the first grade, 9 for the second grade and 9 for the third grade. The school included two shifts: morning shift for girls and afternoon shift for boys. Two classes representing 2<sup>nd</sup> preparatory grade, were chosen randomly out of school classes.

Sample A total sample of 100 students was included in the study, representing the two classes from 2<sup>nd</sup> preparatory grade. Each class contains 50 students. Their ages ranged between 14 to 15 years old. Data was collected within 2 months from March to April 2019.

**Tool of Data Collection:** One tool was utilized in the current study; it was developed by the researchers after extensive review of literature. A Structured interviewing questionnaire for assessment of students' knowledge, attitudes and practices regarding rabies, which included four parts:

**1<sup>st</sup> Part:** Included demographic characteristics of the student such as age, gender, school years, parent level of educations and place residence.

**2<sup>nd</sup> Part:** Assessed students' knowledge regarding Rabies. It consists of 10 questions: as mode of transmission, signs and symptoms and preventive measures.

**3<sup>rd</sup> Part:** Assessed students' attitude toward rabies. It consists of 7 questions related to danger of disease, opinion concerning dealing with animals in the street (playing with them or beating or killing them).

**4<sup>th</sup> Part:** Assessed students' practice toward rabies. It consists of 5 questions related to student practice about rabies as first aid for injury, preventive measures for animals and how to deal with animal bite.

**Scoring System:** Scoring system of knowledge part: a score of 1 was given for each correct answer and a score of zero was given for incorrect answers. The total score of knowledge was distributed as the following: Poor < 50%; Fair 50-80%; Good > 80%.

Regarding attitudes score, the attitude was considered as either positive, if the respondent indicated a correct attitude for the items, or negative otherwise. Regarding practice, it was classified as either appropriate, if the respondent adopted good practices, or inappropriate practices otherwise. All the indicators of the respondents' knowledge, attitudes or practices regarding rabies were categorized into two and coded with 1 for correct knowledge, positive attitudes and appropriate practices or coded with zero otherwise.

**Ethical and Legal Consideration:** An official permission was taken from Boulaq Eldakror educational directorate. Then official permission was obtained from two directors of Al-Shahied Mohamed Farouk Wahdan (morning and afternoon directors). Oral permission was taken from the students who accepted to participate in the study. Before distributing the sheets, the students informed that their answer will not have any relation with their teachers or grades. Also the participation in the study was entirely voluntary and their rights were secured, anonymity and confidentiality were assured through coding the data.

#### **Phases of Application of the Program**

**Administrative Phase:** Through which all official permissions were obtained, either from educational department or from the school administrators. Each student was informed about the purpose and nature of the study. Also, in this phase, the researchers arranged the classes that they would meet students inside them.

**Assessment Phase:** At this phase, tools were developed and pre-test assessment of students' knowledge, attitude and practices regarding rabies was conducted. Then, the program and the educational materials were prepared. The researchers developed the educational program with the aim of improving school students' knowledge, attitude and practices.

**Planning Phase:** This phase included the arrangement for conduction of the program such as teaching place, sessions, teaching methods and handouts. The researchers used simple teaching methods such as lecture, discussion. The media used were as power point presentation, boosters and booklets regarding rabies prepared by the researchers and distributed to students at the end of the program.

**Implementation Phase:** In this phase, the educational program was implemented based on pre-assessment data and related literature review about rabies. The aim of the program was to improve students' knowledge, attitudes and practices regarding rabies. The educational program was conducted for one month; through which the researchers met students two days per week to complete the program content. Eight sessions (two sessions per week) were given to students in the form of teaching classes and duration of each session was about 30-45 minutes. Summary was done after each session and at the end of the program. Then booklet containing the main points was distributed to the students at the end of the program.

**Evaluation Phase:** Evaluation of the program was done by making post-test one month after completing the educational program sessions. The purpose of evaluation was to assess the change in students' knowledge, attitude and practice about rabies.

**Pilot Study:** Pilot study conducted on (10%) of the sample to ensure the clarity of the content of tools. This pilot sample was included in the study as there were no modifications made to the tool.

**Statistical Analysis:** The data will be scored, tabulated and analyzed by computer using the "statistical package for the social sciences "(SPSS) program version 20. Descriptive as well as inferential statistics were utilized to analyze data pertinent to the study. Data were presented as number, percentage, mean and standard deviation. Chi-square test and paired T-test were used to compare qualitative and quantitative variables between pre and post-test data. P-value was considered statistically significant when  $P < 0.05$ .

## RESULTS

The study results will be presented in the following sequence:

**Part I:** Description of demographic characteristics of school children.

**Part II:** Distribution of school children according to their knowledge, attitude and practice about rabies in pre and post-test.

**Part III:** Correlation between study variables in pre and post-tests.

Table 1: Frequency distribution of the students according to their demographic data (n=100).

Items	N	%
Sex:		
Male	60	60
Female	40	40
Place of residence:		
Slum	70	70
Rural	30	30
Family income:		
Not enough	40	40
Enough	50	50
Enough and exceed	10	10
Father education:		
Neither read or write	9	9
read and write	30	30
Diploma	42	42
University	19	19
Mother education:		
Neither read or write	12	12
read and write only	40	40
Diploma	28	28
University	20	20
Previous information about rabies:		
Yes	20	20
No	80	80
Total	100	100

Table (1) represents that more than half of students (60%) were males and 70% of students live in slum areas. Regarding family income, it shows that 40% of the families had not got enough income monthly. As regard parents' education, it was found that 30% of fathers and 40% of mothers can read and write only. It was also found that 80% of students did not get any information about rabies.

Table (2) shows that, the students' correct knowledge of rabies had been improved significantly in all items after implementation of the program than before.

Table (3) shows that more than two thirds (76%) of students had got good level of knowledge about rabies after implementation of the program, with a highly significant difference among levels of rabies knowledge before and after implementation of the program.

Table (4) represents that families and social media are the most common sources of information about rabies among school students.

Table (5) indicates that, positive attitude of school students toward rabies had been improved significantly after program implementation.

Table (6) shows that, school students' appropriate practices regarding rabies were improved significantly after program implementation.

Table 2: Frequency distribution of the students' correct knowledge about rabies before and after implementation of the program (n=100)

Knowledge Variables	Pre-test		Post-test	
	Correct knowledge		Correct knowledge	
	N	%	N	%
Definition of rabies	52	52	93	93
Animals acquire rabies	21	21	94	94
Animals transmit rabies to human	13	13	90	90
Methods of rabies transmission from the animal to human	23	23	82	82
*Symptoms appear on the animal when infected by rabies	45	45	86	86
*Symptoms appear on the human when infected by rabies	32	32	82	82
*First aid measures of rabies	22	22	80	80
The bite wound can be sutured	15	15	88	88
The bite wound can be bandaged	17	17	82	82
*How to prevent occurrence of rabies	94	94	100	100

\*Responses aren't mutually exclusive.

Table 3: Distribution of the total students' percentage score of knowledge regarding rabies before and after program implementation:

knowledge levels	Pre test	Post test	P value
Poor	84.6%	3.4%	P < 0.005
Fair	10.5%	29.6%	
Good	4.9%	67%	

Table 4: Distribution of the sources of information about rabies among school students:

Sources of information	N	%
Family	70	70
Social media	60	60
Radio & TV	35	35
School	20	20
Friends	45	45

\*Responses aren't mutually exclusive

Table 5: Frequency distribution of the school children' attitude toward rabies before and after program implementation (n=100).

Statements	Pre-test		Post-test	
	Positive Attitude		Positive Attitude	
	N	%	N	%
Rabies is a dangerous disease	66	66	98	98
Rabies leads to death	22	22	91	91
Rabies can be prevented	25	25	95	95
Do not hit/beat street animals	68	68	94	94
Do not play with street animals	62	62	96	96
Ensure that dogs are vaccinated	30	30	90	90
Do not kill animals in the street	68	68	98	98

Table 6: Frequency distribution of the school children' practice regarding rabies before and after program implementation (n=100).

Practice actions	Pretest		Posttest	
	Appropriate practices		Inappropriate practices	
	N	%	N	%
Action taken if an animal attacks you in the street	55	55	95	95
First action if you get harm from street animals	84	84	97	97
Actions to prevent the occurrence of rabies for animals which present at home	96	96	99	99
First aid in case of an injury from an animal	13	13	89	89
Management of animal bites	15	15	88	88

Table 7: The relation between students' total mean scores of knowledge, attitude and practice before and after program implementation (n=100).

Dimensions	Pretest		Post test		Paired t test	
	Mean	SD	Mean	SD	t	P
Total knowledge	9.8	1.58	13.3	1.14	18.9	0.00*
Total attitude	13.93	2.19	17.41	1.16	9.78	0.00*
Total practice	7.78	1.19	13.85	0.44	16.8	0.50*

\*Significant at P < 0.05

Table 8: Relation between the mean scores of school students' gender and their knowledge, attitude and practice before and after program implementation (n=100)

Variables	Time	Gender	Mean	SD	Independent t -test	
					t	p
Knowledge	pretest	Male	10.33	1.57	3.65	0.50
		Female	9.24	1.41		
	Post test	Male	13.48	1.15		
		Female	13.12	1.12		
Attitude	pretest	Male	13.37	2.39	2.677	0.06
		Female	14.51	1.80		
	Post test	Male	16.28	1.01		
		Female	16.54	1.28		
Practice	pretest	Male	7.94	1.34	1.39	0.25
		Female	7.61	1.0		
	Post test	Male	7.86	.40		
		Female	7.84	.47		

\*Significant at P < 0.05

Table 9: Relation between the mean scores of school students' place of residence and their knowledge, attitude and practice before and after program implementation. (n=100).

Variables	Time	Residence place	Mean	SD	Independent t test	
					t	p
Knowledge	Pretest	Slum	9.83	1.75	0.09	0.23
		Rural	9.79	1.45		
	Post test	Slum	13.03	1.38		
		Rural	13.41	1.01		
Attitude	Pretest	Slum	14.12	1.75	1.49	0.01*
		Rural	13.89	2.37		
	Post test	Slum	16.17	1.21		
		Rural	16.51	1.13		
Practice	Pretest	Slum	7.53	0.96	1.62	0.05*
		Rural	7.94	1.28		
	Post test	Slum	7.87	0.35		
		Rural	7.84	0.47		

\*Significant at P < 0.05

Table 10: Relation between the mean scores of school students' parental education level and their knowledge, attitude and practice before and after program implementation. (n=100)

Variables	Time	Parents' education	Mean	SD	One way ANOVA	
					F	p
Knowledge	Pretest	Neither read nor write	10.22	2.39	1.54	0.02*
		Read and write	9.43	1.41		
		Diploma	9.71	1.57		
		University education	10.33	1.37		
	Post test	Neither read nor write	12.6	1.52		
		Read and write	13.31	1.05		
		Diploma	13.26	1.27		
		University education	13.58	0.69		

Table 10: Continued

Variables	Time	Parents' education	Mean	SD	One way ANOVA	
					F	p
Attitude	Pretest	Neither read nor write	14.0	1.66	0.93	0.45
		Read and write	14.37	1.67		
		Diploma	13.64	2.47		
		University education	14.0	2.47		
	Post test	Neither read nor write	15.6	2.3	2.94	0.03*
		Read and write	16.04	1.34		
		Diploma	16.7	0.95		
		University education	16.37	0.76		
Practice	Pretest	Neither read nor write	7.78	1.39	0.62	0.65
		Read and write	7.53	1.11		
		Diploma	7.90	1.25		
		University education	7.94	1.11		
	Post test	Neither read nor write	8.0	0.71	0.66	0.58
		Read and write	7.92	0.27		
		Diploma	7.8	0.49		
		University education	7.84	0.37		

\*Significant at P < 0.05

Table (7) indicates a significant difference in the total mean scores of students' knowledge, attitude and practice before and after program implementation.

Table (8) shows that there wasn't significant relation between the mean scores of school students' gender and their knowledge, attitude and practice before and after program implementation.

Table (9) shows that there was a significant difference in the mean scores of school students' place of residence and their knowledge, attitude and practice before and after program implementation

Table (10) represents a significant difference between the mean scores of school students' parental education level and their knowledge and attitude before and after program implementation. While there was no significant relation between parental education and practice of school students.

## DISCUSSION

Rabies is considered as major public health issue worldwide especially in developing countries and rural communities. Annually, there are estimated to be 55 000 human rabies deaths in more than 150 countries, including Egypt [8]. Children under the age of 15 years constitute 40% of all human rabies deaths, yet this is preventable through a combination of vaccinating dogs against rabies and school students' education. Many studies have shown that people in rabies endemic areas lack sufficient knowledge and practices about rabies. So, it is the role of community health nurses design and implement programs

to those children, to improve their knowledge, attitude and practices toward rabies in order to decrease disease burden [21, 23, 25].

Results of the current study revealed that more than half of students (60%) were males and more than two thirds of them (70%) live in slum areas, more than half of families (40%) had not got enough monthly income and it was also found that more than three quarters of students (80%) did not get any information about rabies. Regarding parents' education, it was found that 30% of fathers and 40% of mothers can read and write only. These findings agree with a study done by Serebe *et al.* [26], in Ethiopia, on 139 households who are selected randomly from different parts of the town. The aim of this study was to assess knowledge, attitude and practice of those households regarding prevention and control of rabies. It was found that more than two thirds (77.7%) of respondents were males, 38% of them can read and write only and the majority of participants did not get previous information about rabies.

On the other side, another study done by Khalaf [18] to assess the effect of a health education program on rabies knowledge for households in rural areas in Assiut Governorate, Egypt, on 436 households who were selected randomly from three villages. It was found that, more than two-thirds (70.2%) of the households were females, more than one third (42.2%) of the participants had a secondary level of education, slightly less than half of them (48.2%) were falling in the middle-level social class (have enough monthly income).

The present study found that families and social media were the most common sources of information about rabies among school students (70%, 60% respectively) and the least source was school (20%). This result is varied in many studies. A study by Abdela *et al.* [27] was designed to determine the level of community knowledge, attitude and practices (KAP) regarding rabies in Dedo district, Jimma zone, south western Ethiopia. It was found that health professionals were the main source of information about rabies (71%), followed by media (43%) and friends (25%). Another study by Bihon *et al.* [28] was designed to assess knowledge, attitude and practices of the community towards rabies in south Gondar zone, Ethiopia on 384 respondents and found that the informal sources of rabies had got the highest percentage (92%). The study by Khalaf [18] indicated that families had the highest percentage (49.3%), followed by radio & TV (42.2%), doctors (14.4%) and the least was health personnel (8.9%).

The current study indicated that the students' knowledge, attitude and practices of rabies had been improved significantly in all items after implementation of the program. This result agreed with many studies. The studies done by Khalaf [18], Serebe *et al.* [26], who declared that the participants' knowledge had been improved significantly after program and declared that 66.1% of them were having good scores of knowledge in the post-test results. Another study by Gebrezgiher *et al.* [29] had revealed that 63.4% of respondents have good knowledge on rabies prevention and control, while 63.8% of them had good attitude towards rabies prevention and control and 44% of participants had good practices toward rabies.

In the same line, a study done by Hossain [21], to assess the knowledge, attitude & practice about rabies and pet animals on 400 students, who are selected by simple random method from school going children in Bangladesh. It was found that the pre-knowledge, attitude and practice (KAP) study results had improved significantly after implementation of education about rabies to school students. This result reflects that proper education regarding the rabies must be directed toward school children and the whole public in order to prevent and eliminate the disease.

The present study also showed that there wasn't a significant relation between the school students' gender and their knowledge, attitude and practice before and after program implementation, while there was a significant

relation between school students' place of residence, parental education and their knowledge, attitude and practices regarding rabies. Almost the same results were obtained from the study of Hossain [21] who found that there was no relation between students' gender & educational level and their knowledge, attitude or practice about rabies, while the students' age had a significant relation with their knowledge, attitude or practice about rabies. These similarities between the two studies may be due to that all students regardless their gender, age or place of residence are in great need for rabies education.

In the same context, the study of Khalaf [18] had concluded that there was significant association with KAP scores and students' sex ( $\chi^2 = 69.624$ ,  $p < 0.05$ ). The good scores were higher in males (53.4%) than females (10.7%). This is agreed with Ali *et al.* [30] who conducted their study to assess knowledge, attitude and practice of rabies among residents in Addis Ababa, Ethiopia. In referral to the relation between the level of parental education and score of knowledge, attitude and practice (KAP); the mentioned study revealed that there was relation between both pre/posttest ( $p = 0.005$ ). This result agreed with Guadu *et al.* [31] who conducted their study to assess the knowledge, attitudes and practices (KAP) of 423 households through face to face interview using pretested and structured questionnaires, on rabies and associated factors among the community of Bahir Dar town and they reported that the majority of the study participants (64.1%) had good level of KAP about rabies in pre and post- tests. There was strong association between KAP scores and sex of participants ( $\chi^2 = 69.624$ ,  $p < 0.05$ ); their educational level ( $\chi^2 = 1.893$ ,  $p < 0.05$ ) and their occupation ( $\chi^2 = 58.554$ ,  $p < 0.05$ ).

The results of the current study also showed a significant relation between students' knowledge, attitude and practice before and after program implementation. This result is supported with many studies. A study by Ntampaka *et al.* [14] who conducted a cross-sectional survey using a structured questionnaire among 137 dog owners to understand the knowledge, attitudes and practices (KAP) of rabies and its control among dog owners in Kigali city of Rwanda. The study confirmed that the majority of dog owners had sufficient knowledge and adopted appropriate attitude & practices of rabies. Another study done in rural Sri Lanka by Kanda *et al.* [24] with the aim to improve practices on rabies prevention and pet care among school children and to evaluate its effectiveness through pre- and post- tests. The study revealed that there was a significant relation between



KAP scores among participants, which means that with the improvement in participants' knowledge, there is an improvement in their attitude and practices regarding rabies. This also supported with the studies by Bihon *et al.* [28], Gebrezgiher *et al.* [29], Burdon Bailey *et al.* [32] and Nilsson [33].

Finally, it is apparent that the threat of rabies to school students would be reduced if they are given appropriate information and practices on rabies prevention as a part of the school curricula. Close collaboration with local education offices is important to successful implementation of school-based rabies control programs.

### CONCLUSION

The present study concluded that, the health education program about rabies was effective in improving school students' knowledge; attitude and practices regarding rabies. The students' knowledge, attitude and practices of rabies had been improved significantly in all items after implementation of the program. The present study also showed that there wasn't a significant relation between the school students' gender and their knowledge, attitude and practice before and after program implementation, while there was a significant relation between school students' place of residence, parental education and their knowledge, attitude and practices regarding rabies.

**Recommendations:** Based on the finding of the current study, the following recommendations are suggested:

- Dissemination of the program to school students and to the public through mass media to increase their knowledge; improve attitude and practices regarding rabies and its preventive measures.
- Introducing rabies' knowledge, correct practices and first aid measures in school students' curriculum and officially endorsing the use of the rabies education curriculum manual in public schools.
- Conducting further researches with large sample size in different community settings in order to generalize the results.
- Raising public awareness about rabies disease, first aid measures of animal bites, ensuring compliance with dog vaccination (as dogs are the main reservoir of the disease) and improving access and affordability of the vaccine, in order to prevent and control the disease.

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