International Journal of Nursing Research (IJNR)

International Peer Reviewed Journal

Research article

Health education program regarding rabies knowledge for households in rural areas, assiut governorate, Egypt

Fatmaa Ragab Khalaf, Shimaa Abdelrahim Khalaf*

Community Health Nursing, Faculty of Nursing, Assiut University, Egypt.

Abstract

Rabies is a viral and vaccine-preventable zoonotic disease that occurs throughout the world; it is almost always fatal. **Aim:** was to assess the effect of a health education program on rabies knowledge for households in rural areas in Assiut Governorate. **Materials and method**: Cross-sectional quasi-experimental with one group pre/posttest research design; interview questionnaire used for data collection it was structured into two parts: Part (1): It included households' socio-demographic characteristics such as: age, sex, level of education, religion, occupation, family income and assessment of the social class according to Abdeltwab, 2010 and Part (2): It included questions regarding knowledge about rabies such as definition of rabies, modes of transmission of rabies, animals can transmit rabies….etc. The total sample size was 436 was interviewed in the randomly selected three villages affiliated to Assiut Governorate. Households were selected by systematic random sampling technique. **Results:** The present study revealed that36.2% of households their ages were 40-50 years, more than two-thirds of them were female and 42.2% of them had secondary education and less than half of the 48.2% were falling in the middle-level social class.94.5% households were had a poor score of knowledge in the pretest, while 66.1% were had a good score of knowledge in the posttest. Also, there were significant statistical differences in the pretest between the total score of knowledge and households' age, sex, educational level, occupation and social class. **Conclusion**: There was an improvement of the total score of knowledge regarding rabies among the households after application of the educational program.

Key words: rabies; knowledge; households; reported practices.

***Corresponding author: Shimaa Abdelrahim Khalaf,** Lecturer of Community Health Nursing, Faculty of Nursing, Assiut University, Egypt. E-mail: shiamaa.abdelrahim@yahoo.com; dr.shaimaaahmed@aun.edu.eg

1. Introduction

Rabies with its worldwide distribution considered a fatal zoonotic disease and a major public health problem in most of the developing countries. The causative agent of this encephalitis disease is rabies virus, which belongs to the genus Lyssavirus and family Rhabdoviridae.

Access this article online

Website:www.innovationalpublishers.com/journal/ijnr | e-ISSN: 2456-1320

How to cite this article: Fatmaa Ragab Khalaf, Shimaa Abdelrahim Khalaf, Health education program regarding rabies knowledge for households in rural areas, assiut governorate, Egypt. Int J Nur Res. 2018; 4(1):13-22.

It is a disease of mammals, the sensitivity to the virus can vary from different mammal hosts. Rabies virus is spread over geographical areas through mammal reservoirs. Beside poliomyelitis and pox, rabies is one of the longest known infectious diseases in human history [1, 2, and 3].

The World Health Organization (WHO) considers rabies to be a neglected disease and declare it to be primarily a problem of/with area troubled with poverty and with a lack of economic resources. With over 55, 000 human deaths a year and signs of it re-emerging there are reasons for rabies to become acknowledged and prioritized as a more serious health burden of/on the world than it is considered today [2,4].

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 and mammals. In domestic animals, the incubation period is 3-12 weeks but can range from several days to months, rarely exceeding 6 months. Clinical manifestations of the disease appear when the virus migrates from the bite site to the central nervous system, the duration of that is highly variable depending on several factors including the distance from the bite site to the brain. The virus is then spread from the bite wound site by using the peripheral nervous system. Some other tissues also get infected with the virus, such as muscles and the salivary glands which is why saliva becomes a source of infection to other individuals [5, 1].

In the infected animal; rabies proceeds with consecutive three phases; "prodromal phase" which includes different signs of behavioral changes, “furious phase” which manifested with unprovoked attacks and aggressiveness, finally, “the paralytic phase” in which the infected animal appears to be restless and have excessive salivation. While rabies signs of the human appear with a headache, hydrophobia, behavioral changes and an itching and painful wound. Humans, as well as animals, usually die within a week after the first neurological signs are noticed [2, 6].

After an animal bite, wound management in different localities in the developing areas in the world may pass through a lot of myths, false beliefs, and inappropriate practices. These include the application of oils, herbs and red chilies on the wounds inflicted by rabid animals. These faulty practices have negative effects and delay the proper wound management [7 and 8].

The first-aid measures after biting of the infected animal, it is of great importance which includes cleaning of the bite wound with water and soap and after that to get post-exposure prophylaxis as soon as possible. Rabies disease is possible to prevent vaccination. To reduce the number of human rabies cases, vaccination of dogs against the disease is recognized as a relatively financially sustainable method [2, 8, and 9].

Poor public health awareness regarding rabies is considered the stumbling block of the prevention and control measures of the disease. Understanding populations' perceptions of causes, modes of transmission, symptoms, treatment and possible intervention measures of rabies is an important step towards developing strategies aimed at controlling the disease and determining the level of implementation of planned activities in the future. Lack of rabies knowledge and pet vaccination compliance is not directly connected with income level, but they are associated with gender and education level [10, 11, 12, 6 and13].

The aim of this study is to assess knowledge and reported practices of households regarding rabies disease, plan, implement and evaluate the educational program on knowledge of households regarding rabies.

Significance of the study

In Egypt, people experience many animal bites annually with more than 200 000 animals' bites recorded each year mostly from dogs. On average 60 people die annually from rabies in Egypt [14].

In Egypt, there are little researches about rabies knowledge and first aid measures among households' member, also the researchers observed that participants were had poor knowledge about rabies and their immediate measures to dealing with rabid persons. So, the present study aimed to improve populations' knowledge in dealing with the infected wound and the rabid animal.

2. Method

Study design:

Cross-sectional quasi-experimental with one group pre/posttest research design was applied to evaluate the effect of an educational program regarding rabies knowledge among households of the randomly selected Egyptians' Villages, Assiut Governorate.

Study area:

The study was carried out during the period from November 2016 to April 2017 in three districts affiliated to Assiut Governorate. Assiut Governorate is composing from 11 districts. The studies conducted in three villages were selected randomly from east and west districts in Assiut Governorate (one village from the district in East Assistant two from West Assiut).

Study population:

Included rural community who are living in the randomly selected villages. The total number of population in the selected villages according to State Information Service, 2017 was estimated to be 41162 divided as following (Nazla Abdella=7499; Baqur= 12262 and El-Aqal El- Bahrey= 21401).

Sample collection and sample size estimation:

The needed sample size of this study was calculated by considering 50% of the population knowing about babies since there is no study carried out about rabies in Assiut Governorate before. Thus, the sample size was calculated by using OpenEpi, Version 3 using 95%confidence intervals. As a result, 385 studies samples were selected, 10% added for dropout and refusal rate. The total sample size was= 436 subjects which collected based on the largest number of

population of every village; (200 from El-Aqal El-Bahrey; 136 from Baqurand 100 from Nazla Abdella).

Sampling method

Data were collected through home visits; a multi-stage sampling technique was employed for the selection of the sampling villages. From the entire Assiut Governorates; three different districts were selected from them three villages were selected by simple random sampling technique by using roundtable selection method. Households, in the randomly selected villages, were selected and interviewed by using a systematic random sampling technique every five house one house was selected. The interviewed person was the available (father or mother or eldest daughter or son).

Tools of the study:

The details of socioeconomic status and knowledge were obtained by using interview questionnaire, which was designed by the researchers that visited the selected settings and asked the households personnel to participate in the study; it was structured into two parts:
Part (1): It included the socio-demographic characteristics for the households' personnel (age, sex, education, and income of family according to scale of socioeconomic status [15]
Part (2): It included questions about knowledge about rabies used to assess knowledge level before application of the educational program such as definition of rabies, modes of transmission of rabies, animals can transmit rabies, signs, and symptoms of rabies among animal and first aid of rabies. Answers to these questions were assessed and evaluated immediately after application of the educational program through posttest. The researchers prepared brochures which included the needed information on rabies which was distributed among the participants after finishing the program.
A scoring system was designed for the assessment of households' member's knowledge contains 12 questions; a score of 1 was given for each correct answer and a score of zero was given for an incorrect answer and don't know. The total score of knowledge was determined by taking points as the following: Poor < 50%; Fair 50-80%; Good > 80%.

Reliability of the tool:

Reliability was estimated by Alpa Cronbach test; results of the test=0.827

The validity of the questionnaire:

Checked and revised by a panel of three experts on Community Health Nursing and Public Medicine staff at Assiut University who reviewed the instruments for clarity, relevance, comprehensiveness, understanding, and applicability.

The educational program:

The educational program had been developed by the researchers based on the relevant literature. This program aimed to improve the households' member knowledge regarding rabies.

Sessions	(Contents)	Teaching methods	Media	Time	Evaluation
Session I	● Orientation of the participants, explain the purpose and nature of the study for them ● Orientation of the program ● Pre-test ● Introduction about rabies ● Definition, causes, mode of transmission, signs and symptoms and complications of rabies	- Discussions - Lecture	Handout Data show	1 hour for each researcher	- Participation in discussion during the session
Session II	●	- Discussions - Lecture	Handout Data show	1 hour for each researcher	- Participation in discussion during the session - Post-test

Phases of the educational program:
I-Assessment phase:

The researchers developed the educational program to improve participants' knowledge and practices, it based on pre-test assessment of participants' knowledge and reported practices regarding rabies which denoted knowledge, after that the program and the educational materials were prepared.

II-Planning phase:

This phase included the arrangement for conduction of the program such as teaching place, sessions, and handout.

Teaching place: The program was conducted in the participants' homes.

Teaching time: The time of the program decided according to available time of the participant and the coordination between the researchers and participants by telephone.

Teaching methods and materials: The researchers used simple teaching methods such as lecture, discussion. The media as power point presentation and handouts regarding rabies prepared by the researchers and distributed to every participant at the end of the program.

III- Implementation phase:
Sessions: The contents of the program divided into two sessions:

The first session included information about: definition of rabies, causes, modes of transmission, signs and symptoms and complications of rabies.

The second session included information about: immediate first aid of rabies and post-test was done.
The educational program was conducted for three months; every participant took two sessions for two days to complete the program contents according to participants' available time. Finally, after completion of the program, it was followed by an immediate posttest.

V. Evaluation phase:

The evaluation was done through posttest which done immediately after implementing and completing the educational program to evaluate the participants' knowledge.

Fieldwork

In the first session, the researchers introduced themselves to participants and explain the purpose of the study. The pretest was done before the implementation of the program to assess the participants' knowledge and reported practice, each session started by a summary about what was given during the previous session and the objectives of the new topics. Finally, the posttest was done to evaluate the gained knowledge after the educational program. This program conducted in the period from November 2016 to April 2017.

Methodology:

I- Administrative phase
An official letter approval was obtained from the Dean of the Faculty of Nursing, Assiut University to Assiut Governor, the letter included a permission to carry out the study then letter from the governor to address the mangers of the local health unite in the selected villages to facilitate the researches' work.

II- Pilot study:
It was carried out before starting of data collection for (10) persons. The aim of this study was to test the clarity of the tools and to estimate the required time to fill the questionnaire.

III- Ethical considerations:
- The research proposal was approved from the ethical committee in the Faculty of Nursing, Assiut University.
- There was no risk for study subjects during application of the research.
- The study was following common ethical principles in clinical research.
- Oral consent obtained from the participants that were willing to participate.
- Confidentiality and anonymity were assured.
- Participants had the right to refuse to participate or withdraw from the study without any rationale at any time.
- Study subjects' privacy was considered during collection of the data.

Statistical analysis:

Data entry and analysis were done using SPSS version 19 (Statistical Package for Social Science). Data were presented as number, percentage, mean, standard deviation. Chi-square test and Fisher Exact test were used to compare qualitative variables. Mann-Whitney Test used to compare quantitative variables between two groups and Kruskal Wallis Test for more than two groups as non-parametric data. Wilcoxon Signed Ranks Test was done to compare quantitative variables between pre-test and post-test. P-value considered statistically significant when $P < 0.05$.

3. Results and findings

Table No 1: Socio-demographic characteristics of the studied household, Assiut Governorate

Items	No. (n= 436)	%
Age: (years)		
< 40	133	30.5
40 – 50	158	36.2
> 50	145	33.3
Mean ± SD (Range)	45.53 ± 10.65 (21.0 – 75.0)	
Sex:		
Male	130	29.8
Female	306	70.2
Level of education:		
Illiterate	45	10.3

Items	No. (n= 436)	%
Basic education	56	12.8
Secondary	184	42.2
University	143	32.8
Postgraduate	8	1.8
Religion:		
Muslim	408	93.6
Christian	28	6.4
Occupation:		
Working	213	48.9
Not working	223	51.1
Family income:		
Less than 300 EL	54	12.4
300 to < 600 EL	104	23.9
600 to < 1,000 LE	127	29.1
1,000 to < 1800 EL	100	22.9
1,800 to < 4,000 LE	34	7.8
> 4,000 LE	17	3.9
Social class:		
Low	111	25.5
Middle	210	48.2
High	115	26.4

Table 1: Show that more than one third 36.2% of the total sample was 40-50years old. More than two-third 70.2% of the households was female. Moreover, 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. Social class was estimated according to a socioeconomic scale developed by [15].

Table No 2: History of dog ownership and bites including actions were done among households, Assiut Governorate

Items	No. (n= 436)	%
Dog ownership:		
Yes	155	35.6
No	281	64.4
Vaccination of the dog (n=155):		
Yes	16	10.3
No	139	89.7
Reasons for un-vaccination (n=139):		
No attention	43	30.9
No nearby veterinarian clinic	20	14.4
It is expensive	4	2.9
The animal is healthy	25	18.0
Don't know about importance of vaccination	47	33.8
Family history of doges' bite:		
Yes	204	46.8
No	232	53.2
(#) Actions were done with the bitten person:		
Get a vaccination/a shot	50	24.5
Go to the hospital	96	47.1
Clean the bite wound	13	6.4
Contact a traditional healer	1	.5
Report it to the dog owner	5	2.5
Contact a veterinarian	0	0.0
Kill the dog	5	2.5
Nothing	59	28.9
(#) Actions were done with the dog (n=204):		
Animal under quarantine/died under observation	17	8.3
Killed by community	62	30.4
Nothing	125	61.3

(#) More than one answer was allowed

Table 2: Reveal that more than one-third of the households 35.6% was having dog in their house, the majority of the 89.7% of them didn't vaccinate their domestic dogs. According to the history of dogs' bite among the interviewed households; more than two-fifths of them 46.8% were bitten by a dog, went to the hospital reported by 47.1% of the households as the main action which done with the bitten person.

Table No 3: Pre/posttest knowledge regarding rabies among households, Assiut Governorate

Items	Pre-test (n= 436)		Post-test (n= 436)	
	No.	%	No.	%
Definition of rabies(*):				
Correct	26	6.0	436	100.0
Incorrect	410	94.0	0	0.0
Human can get rabies(*):				
Yes	167	38.3	436	100.0
No	35	8.0	0	0.0
Don't know	234	53.7	0	0.0
(#) Animals can transmit rabies(*):				
Dogs	341	78.2	286	65.6
Cats	35	8.0	364	83.5
Mouse	17	3.9	283	64.9
Donkey	26	6.0	1	0.2
Don't know	80	18.3	0	0.0
(#) Modes of transmission of rabies(*):				
Through bites	328	75.2	403	92.4
Through scratches	30	6.9	405	92.9
Through air/breathing	11	2.5	0	0.0
Through sex	11	2.5	0	0.0
Don't know	84	19.3	0	0.0
(#) Signs and symptoms of rabies among rabid animal(*)				

Items	Pre-test (n= 436)		Post-test (n= 436)	
	No.	%	No.	%
It has altered/strange behavior	43	9.9	185	42.4
It is aggressive	60	13.8	300	68.8
It is chasing people	193	44.3	255	58.5
It is barking	32	7.3	367	84.2
It is not settled/walking around	11	2.5	303	69.5
It does not eat	11	2.5	152	34.9
It tends to bite	77	17.7	226	51.8
It has excessive salivation	30	6.9	231	53.0
Don't know	105	24.1	0	0.0
(#)Signs and symptoms of rabies among human (*):				
The person gets ill	104	23.9	166	38.1
The person gets crazy/mad/dangerous	29	6.7	161	36.9
The person dies	43	9.9	310	71.1
Severe headache	24	5.5	287	65.8
Wound that does not heal/itches	124	28.4	246	56.4
Some can get better/get treatment/do not die	23	5.3	166	38.1
Nothing happens	2	0.5	0	0.0
Don't know	134	30.7	0	0.0
Rabies can be treated after the onset of the clinical signs (*):				
Yes	133	30.5	436	100.0
No	59	13.5	0	0.0
Don't know	244	56.0	0	0.0
(#)First aid of rabies (*)				
Get a vaccination/a shot	83	19.0	404	92.7
Go to the hospital/ Contact a medical doctor	293	67.2	260	59.6
Clean the bite wound	27	6.2	0	0.0
Contact a traditional healer	4	0.9	0	0.0
Report it to the dog owner	14	3.2	0	0.0
Contact a veterinarian	17	3.9	0	0.0
Kill the dog	11	2.5	0	0.0
Nothing	63	14.4	0	0.0
Suturing of the wound (*):				
Yes	80	18.3	95	21.8
No	181	41.5	341	78.2
Don't know	175	40.1	0	0.0
Bandaging of the wound (*):				
Yes	143	32.8	31	7.1
No	111	25.5	375	86.0
Don't know	182	41.7	30	6.9
Fatal nature of rabies disease (*):				
Yes	175	40.1	385	88.3
No	38	8.7	20	4.6
Don't know	223	51.1	31	7.1

(#) More than one answer was allowed (*) Statistical significance differences p-value=0.000

Table 3: Regarding the definition of rabies, only 6.0% of the households knowing the correct definition in pre-test compared with 100.0% of them in posttest knew the correct definition. In addition, more than three-quarters of them 75.2% mentioned that the rabies disease can be transmitted by biting in pretest compared with 92.4% in the posttest. Regarding signs and symptoms of rabies on the rabid animal; 44.3% of the participants mentioned that the animal chasing people compared with 58.5% of them in the posttest. The person gets ill was mentioned as signs which appear on the infected human by 23.9% of them in pretest versus 38.1% in the posttest.

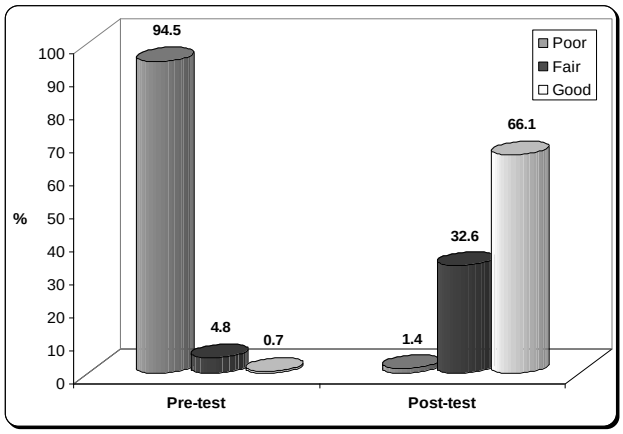

Figure No 1: The total score of knowledge regarding rabies in pre/posttest among studied households, Assiut Governorate

Fig. 1: Declare that the most majority of the households 94.5% were having a poor score of knowledge in the pretest, while 66.1% of them were having good scores of knowledge in the posttest.

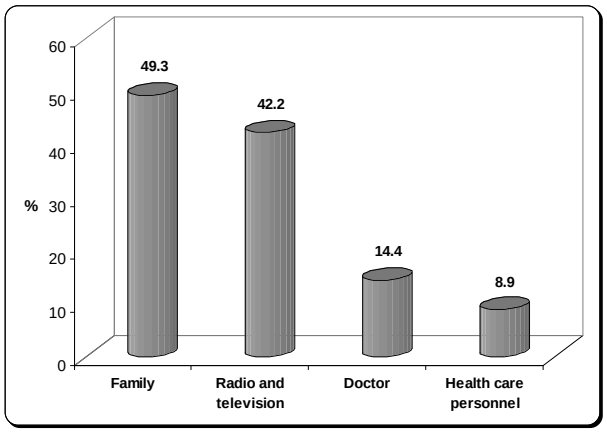

Figure No 2: Sources of knowledge regarding rabies among households, Assiut Governorate

Fig. (2): Show that family was the main source of information about rabies for nearly half of the households.

Table No 4: Relationship between socio-demographic characteristics and knowledge regarding rabies in pre/posttest among households, Assiut Governorate

Items	Pre-test		Post-test	
	Score of knowledge		Score of knowledge	
	Mean ± SD	Range	Mean ± SD	Range
Age (years) (*):				
< 40	5.71 ± 3.28	0.0 - 20.0	19.05 ± 3.08	12.0 - 23.0
40 – 50	6.68 ± 3.35	0.0 - 20.0	19.72 ± 2.63	12.0 - 23.0
> 50	6.36 ± 3.56	0.0 - 21.0	19.25 ± 3.12	12.0 - 23.0
Sex (*):				
Male	7.06 ± 3.16	0.0 - 19.0	19.88 ± 2.55	12.0 - 23.0
Female	5.94 ± 3.47	0.0 - 21.0	19.13 ± 3.07	12.0 - 23.0
Level of education (*):				
Illiterate	5.89 ± 3.13	0.0 - 13.0	19.09 ± 3.15	12.0 - 23.0
Basic education	5.95 ± 3.28	0.0 - 13.0	18.28 ± 3.26	13.0 - 23.0
Secondary	5.77 ± 2.91	0.0 - 20.0	19.40 ± 3.09	12.0 - 23.0
University	7.26 ± 3.97	0.0 - 21.0	19.74 ± 2.41	13.0 - 23.0
Postgraduate	4.75 ± 2.66	0.0 - 8.0	20.63 ± 2.97	14.0 - 23.0
Religion:				
Muslim	6.30 ± 3.49	0.0 - 21.0	19.34 ± 2.98	12.0 - 23.0
Christian	5.93 ± 2.04	0.0 - 11.0	19.54 ± 2.41	13.0 - 23.0
Occupation (*):				
Working	6.75 ± 3.75	0.0 - 21.0	19.79 ± 2.58	13.0 - 23.0
Not working	5.83 ± 2.99	0.0 - 19.0	18.94 ± 3.20	12.0 - 23.0
Social class (*):				
Low	5.47 ± 3.14	0.0 - 15.0	18.79 ± 3.28	12.0 - 23.0
Middle	6.21 ± 2.87	0.0 - 19.0	19.50 ± 2.92	12.0 - 23.0
High	7.17 ± 4.29	0.0 - 21.0	19.63 ± 2.58	13.0 - 23.0

Kruskal Wallis and Mann-Whitney Test(*) Statistical significance differences

Table 4: Demonstrate that there was significance statistical differences between age, sex, educational level, occupation and social class and the total score of knowledge regarding rabies disease among the households' member (P-values=0 0.036, 0.001, 0.005, 0.003 and 0.002 respectively) in the pretest, while there weren't any statistical significant differences between age, sex, religion and social class (P-values= 0.228, 0.074, 0.897 and 0.144respectively) in the posttest.

Table No 5: Relationship between the households' knowledge in pre-test and post-test and history of dogs' bite, Assiut Governorate

Family history of dogs' bite	Pre-test		Post-test	
	Score of knowledge		Score of knowledge	
	Mean ± SD	Range	Mean ± SD	Range
Yes	6.24 ± 3.87	0.0- 21.0	19.11 ± 3.19	12.0- 23.0
No	6.31 ± 2.96	0.0- 20.0	19.57 ± 2.69	12.0- 23.0

Wilcoxon Signed Ranks Test

Table 5: Illustrate that there was no statistical significant difference between family history of dogs' bite and the total score of knowledge regarding rabies disease among the households during pretest and posttest (P-value= 0.675 and 0.287).

4. Discussion

Rabies is one of the oldest recognized infectious diseases, it is affecting all mammals. The disease is most usually transmitted to humans by domestic dog bites. Knowledge, attitudes, and practices (KAP) studies have been widely used around the world for different applications in public health based on the principle that increasing knowledge will result in changing attitudes and practices to minimize disease burden[16].

The current study aimed to evaluate the impact of the educational program on households' knowledge regarding rabies.

According to socioeconomic characteristics of the participated households, it was observed that more than one-third of them were in the age group 40-50 years; more than two-thirds were female. This agreed with [11] and [16] who reported that the majority of their studied sample was female; at the time of the study most, the available person in the home was female.

In referral to educational level and working conditions; more than two-fifths of the participated household was having secondary education. While more than half of them were not working and less than half were falling in the middle social class. This observation agreed with [11], who reported that more than one-third of their studied sample completed secondary school and 10.3% of them had college undergraduate degrees whereas 12.8% of them were illiterate. In contrast, this observation not in the same line with [17]; who recorded that nine percent of the respondents had completed primary school.

According to a score of knowledge of the participated households; it was found that most of them were having poor score of knowledge. This observation was in contrast with [11]; who reported that more than three-quarters of participants was having moderate level of knowledge. Also, [1]; recorded that 64.1% of the study participants were found to have good KAP about rabies.

According to households' knowledge about the definition of rabies disease; only 6.0% of them gave the correct answer to pretest compared with all of them in the posttest. This finding wasn't in the same line with [5]; who reported that most of the sample was familiar with the disease.

In referral to the knowledge of the households about the animals which can transmit rabies, dogs mentioned by more than three-quarters in the current study, this observation was in the same line with [18]; who reported that dog considered as the main source of infection to most of the studied sample. Also, [5, 12] had pointed out that dogs mentioned by the majority of the animal which transmits the rabies disease. Moreover, [1] mentioned that 71.3% were aware that dog is the most common source of rabies.

Regarding knowledge about modes of rabies transmission; in the current study; more than three-quarters of the studied sample answered that rabies can be transmitted through bites of the infected animal. This observation agreed with [11]; who reported that the bite was the main mode of rabies transmission of the animal to animal (67.8%).Similarly,[16 and 12]; reported that eighty-one percent and 94% knew that rabies was transmitted through bites by suspect rabid animals. Also, results of [17] recorded that 71% of the respondents mentioned that bite was the main mode of rabies transmission. Likewise, [7]; showed that all study participants had knowledge about transmission of rabies by a dog bite.

According to ownership of dogs in houses; 35.6% of the studied sample was having dogs. This result agreed with [16]; who reported that almost one-sixth of households in the survey owned domestic dogs. Also, [1] reported that 20.7% of respondents had a dog. Moreover, [19]; recorded that the total dog owning among the interviewed households during the study period were 87%.

Regarding knowledge about the first aid of rabies; in the current study; more than one-sixth of the studied sample mentioned that get a vaccination/a shot was their first aid action. In contrast with [20]; who reported that only 19.8% of the participated sample practiced washing of the wound with soap and water? Moreover,[18] observed that the majority of the participant practiced cleaning of the wound as a first aid measure.

The finding of the present study showed that more than half of this household didn't consider that rabies as a fatal disease; a similar finding was reported by [16]; who reported that a large percentage of their studied sample was unaware of the fatal nature of the disease. While, on the other hand [1]; who reported that 94.9% of the participants answered that rabies is a dangerous and fatal disease.

In the current study radio and television was the main source of information about rabies for 42.2% of the respondents, this result as the same with [8]; who recorded that 34.4% of the sample was got the knowledge about rabies through formal ways such as radio and television. These results incongruent with [1]; who reported that 86.6% of the participants heard information from traditional healers, neighbors, friends, and relatives.

Regarding reported practices of households' member's actions were done with the bitten person; less than half of them (47.1%) take the person to the hospital. These results disagreed with [1]; who mentioned that (70.8%) of the respondents washed the wound with water and soap immediately. Also, [17] observed that eight percent of the respondents would wash the injuries using soap and water. Moreover, [5] recorded that 41.7% of the participants exposed to vaccination after the dog's bite.

The present study disclosed that 46.8% of the interviewed households' participant experienced the previous history of dog' bite. Also, [1] reported that 60.6% of the respondents were having experience of the previous animal bit. Moreover, [7] reported that almost half of the study participants had given the history of dog bit in any one of the family member. In addition, there weren't any relation between pre/posttest score of knowledge and history of an animal bite (p= 0.675 and 0.287 respectively); this was in contrast with [21]; who showed that personal experience of rabies effect on KAP.

According to the presence of significant relation between knowledge about rabies and sex, the current study recorded that there was relation between pretest (p=0.001) and there wasn't any relation between posttest (p=0.074) among the participants; in contrast,[1]concluded that there was significant associated with KAP scores and sex ($x2$= 69.624, p <0.05). The good scores were higher in males (53.4%) than females (10.7%).This is agreed with [11].

In referral to the relation between the level of education and score of knowledge; there was relation between both pre/posttest (p=0.005 and 0.031 respectively). This observation agreed with [1]; who reported that educational status was significantly associated with KAP scores ($x2$ =1.893, p < 0.05). It also in agreement with [11]; who recorded that the study respondents with higher education levels (20.31%) had higher percentages of good rabies knowledge.

The results of this study disclosed that there was a significant relation between a score of knowledge and working status of the participants p= 0.003 and 0.030 respectively; this data was at the same line with [8]; who concluded that occupation had a statistical significant association with knowledge levels (p=0.001).

Rabies is an eminent zoonotic disease in the selected studied villages and itis a disease of significant public health importance. The most majority of the households' members were having poor scores of knowledge in the pretest, while 66.1% of them were having good scores of knowledge in the posttest. There was an apparent lack of awareness regarding urgent actions in dealing with dogs' bite.

Recommendations:

- The Health Directorate in Assiut Governorate should provide periodical health education to raise community knowledge about rabies and provide accurate information for public and rural population specifically.
- Increase public awareness about rabies disease and immediate accurate first-aid measures of animal bite through different channels of mass media such as radio and T.V. programs.
- Increase the availability of the anti-rabies vaccine in health care units and centers.

Limitations of the study:

Small sample size hence generalization would be difficult.

Acknowledgement

Many thanks offered to the Governor of Assiut for providing the researchers the opportunity to carry out the present study. The researchers also thank all the household participants who took part in the study for their cooperation.

References

[1] Guadu T, Shite A, Chanie M, Bogale B, Fentahun T. Assessment of knowledge, attitude and practices about rabies and associated factors: in the case of Bahir Dar town. Global Veterinaria. 2014; 13(3):348-54.

[2] Nilsson M. Effect of rabies education programs on rabies awareness, attitudes towards dogs and animal welfare among children in Lilongwe, Malawi.

[3] Hossain M. Study on Knowledge, Attitude & Practice about Rabies & Pet Animals among School Children in Bangladesh. Journal of Microbiology & Experimentation. 2017 4 (1):1-15.

[4] Wu H, Chen J, Zou L, Zheng L, Zhang W, Meng Z, Magalhaes RJ, Wang Y, Kang J, Sun X. Community-based interventions to enhance knowledge, protective attitudes and behaviors towards canine rabies: results from a health communication intervention study in Guangxi, China. BMC infectious diseases. 2016 Dec; 16(1):701.

[5] Serebe SG, Tadesse KA, Yizengaw HA, Tamrat SM. Study on community knowledge, attitude and practice of rabies in and nearby Gondar town, North West Ethiopia. Journal of Public Health and Epidemiology. 2014 Dec 31; 6(12):429-35.

[6] Gebeyaw S, Teshome D. Study on Community Knowledge, Attitude and Practice of Rabies in and Around Dessie City. Austin J. Vet. Sci. Anim. Husb. 2016; 3(1):1020.

[7] Prakash M, Bhatti VK, Venkatesh G. Rabies menace and control–An insight into knowledge, attitude and practices. Medical journal armed forces India. 2013 Jan 1; 69(1):57-60.

[8] Yalemebrat N, Bekele T, Melaku M. Assessment of public knowledge, attitude and practices towards rabies in Debark Woreda, North Gondar, Ethiopia. Journal of Veterinary Medicine and Animal Health. 2016 Nov 30; 8(11):183-92.

[9] MuriukiJ. Knowledge, attitude and practices on rabies in Kisumu and Siaya counties, Kenya, A thesis submitted in partial fulfillment of the requirements for Master Veterinary Medicine 2016; pp 1-85.

[10] Palamar MB, Peterson MN, Deperno CS, Correa MT. Assessing Rabies Knowledge and Perceptions Among Ethnic Minorities in Greensboro, North Carolina. J Wildl Manage. 2012; 77(7):1321–6.

[11] Ali A, Ahmed EY, Sifer D. A study on knowledge, attitude and practice of rabies among residents in Addis Ababa, Ethiopia. Ethiopian Veterinary Journal. 2013; 17(2):19-35.

[12] Digafe RT, Kifelew LG, Mechesso AF. Knowledge, attitudes and practices towards rabies: questionnaire survey in rural household heads of Gondar Zuria District, Ethiopia. BMC research notes. 2015 Dec; 8(1):400.

[13] Muthunuwan JT, Ganhewa AG, Perera HD, Hishaam M, Bandara WM, Gunasekera HA. Preliminary survey on knowledge, attitudes and practices regarding rabies. Sri Lankan Journal of Infectious Diseases. 2017 May 4; 7(1).

[14] World health organization (WHO).WHO, in collaboration with the Ministry of Health and Population of Egypt, World Rabies Day. 2017.

[15] Abdel-twab. Socioeconomic scale. Faculty of Education, Assiut University; 2010.

[16] Sambo M, Lembo T, Cleaveland S, Ferguson HM, Sikana L, Simon C, Urassa H, Hampson K. Knowledge, attitudes and practices (KAP) about rabies prevention and control: a community survey in Tanzania. PLoS neglected tropical diseases. 2014 Dec 4; 8(12):e3310.

[17] Moran D, Juliao P, Alvarez D, Lindblade KA, Ellison JA, Gilbert AT, Petersen B, Rupprecht C, Recuenco S. Knowledge, attitudes and practices regarding rabies and exposure to bats in two rural

communities in Guatemala. BMC research notes. 2015 Dec; 8(1):955.

[18] Nayak RK, Walvekar PR, Mallapur MD. Knowledge, Attitudes and Practices regarding Rabies among general practitioners of Belgaum City, Al Ameen J Med Sc i 2013; 6(3) :237-242 _ US National Library of Medicine enlisted journal _ ISSN 0974-1143.

[19] Mucheru GM, Kikuvi GM, Amwayi SA. Knowledge and practices towards rabies and determinants of dog rabies vaccination in households: a cross sectional study in an area with high dog bite incidents in Kakamega County, Kenya, 2013. The Pan African Medical Journal. 2014; 19.

[20] Kamble B, Panesar S, Das A, Roy N, Yadav G, Khokhar A, Kishore J. Knowledge, attitude and practices related to animal bites among the residents of an urbanized village in South Delhi. Int J Res Development Pharma Life Sci. 2016 Apr; 5(3):2164-8.

[21] Davlin SL, Lapiz SM, Miranda ME, Murray KO. Knowledge, attitudes, and practices regarding rabies in Filipinos following implementation of the Bohol Rabies Prevention and Elimination Programme. Epidemiology & Infection. 2014 Jul; 142(7):1476-85.