

Effect of Health Educational Program for Rural Population on Prevention of Rabies**Nora Abdel Maksoud Taha¹, Howyida Sadek Abd El Hameed², Doaa Mohamed Sobhy El Sayed³ and Mona Abdallah Abdel-Mordy⁴***(1) M.Sc. (2014) of Community Health Nursing, Faculty of Nursing -Menoufia University, Egypt,**(2) Prof. of Community Health Nursing, Faculty of Nursing -Benha University, Egypt, (3) Assistant**Professor of Community Health Nursing, Faculty of Nursing- Benha University, Egypt and (4)**Lecturer of Community Health Nursing, , Faculty of Nursing -Benha University, Egypt*

Background: Rabies is a fatal viral zoonotic disease and a serious public health problem that can affect all mammals, including humans, cats, dogs and wildlife and farm animals. **The aim** of this study was to evaluate the effect of health educational programs for rural population on prevention of rabies. **Research design:** Quasi-experimental design. **Setting:** The study was conducted at Met El atter- Ramala- Met Radi- Met Alhovin- Damalo- Warwara and Bata health care center. **Sample:** Simple random sample was used from rural population attending to the previously mentioned settings to emergency department, sample size was (372). **Tools of data collection:** Two tools were used, tool (1) interviewing questionnaire and tool (2) assess attitude of rural population regarding rabies by using Likert scale. **Results:** 66.9% of the studied sample had a poor total level of knowledge level about rabies at pre-program implementation, moreover, 74.5% of them had good total knowledge level at post program implementation. 17.7% of the studied sample had satisfactory total practices level toward prevention from rabies pre-program implementation and this percentage increased to 82.3% post program implementation. 25.0% of the studied sample had positive total attitude level toward rabies pre-program implementation and this percentage increased to 86.6% post program implementation. **Conclusion:** There was a highly statistically significant correlation between the studied rural population's total knowledge level and total practices level and total attitude level preprogram and post program implementation. **Recommendations:** Providing health educational program about rabies in a wide scope of the population.

Key words: Health Educational Program; Rabies; Rural Population

Introduction

Rabies Virus (RV) is a zoonotic disease that causes an acute, fatal neurological infection in humans and other mammals, transmitted through the saliva of rabid animals via a bite or scratch. From the site of infection the virus travels along neurons to the Central Nervous Center (CNS), where viral replication leads to symptoms and systemic spread. Once symptomatic, the disease is nearly 100% fatal. However, the disease is 100% vaccine-preventable through the prompt administration of human Post Exposure Prophylaxis (PEP) and vaccination of animal reservoirs(**Brunker& Mollenza, 2018**).

The Rabies virus is transmitted from domestic and wild animals to humans through direct contact (such as through broken skin or mucous membranes in the eyes, nose, or mouth) with saliva or brain/nervous system tissue from an infected animal. Non-bite exposures which can include scratches, abrasions, or open wounds that are exposed to saliva or other potentially infectious material from a rabid animal. Inhalation of aerosolized rabies virus is one potential non-bite route of exposure, but except for laboratory workers, most people won't encounter an aerosol of rabies virus. Rabies transmission through corneal and solid organ transplants have been recorded, but they are also very rare most

infections 90 % are transmitted by bites of domestic animals like cats and dogs, owing to their close association with humans Center of **Disease Control and Prevention (CDCP), 2019).**

Community health nurses at rural area are the first to come in contact with victim of animal bite and first aid is usually sought from them they also act as the important sources to create and spread awareness among the rural population and for early referral to health facilities for vaccination through health education. Health education is act as effective intervention in reducing misconceptions and improving the knowledge, practices and attitudes regarding the management of animal bite victim (**Crasthra&Thangaraj, 2018).**

Significance of the study:

In Egypt, there are little researches directed toward rural population regarding rabies and its prevention. It had been observed that rural population, they have poor knowledge, practice and attitude about rabies. So, the researcher wants to shed light about rabies prevention and this study to improve knowledge and practice and attitude about rabies for rural population on prevention of rabies. 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 (**World Health Organization (WHO), 2019).**

Aim of the study: evaluate the effect of health educational program for rural population on prevention of rabies.

Research Hypothesis: Knowledge, practices and attitudes of rural population will improve after the health educational program implementation.

Subject and Methods:

Research design: Quasi-experimental design was used in this study.

Setting:

This study was conducted at Seven Rural Health Units in Benha Health Administration from total Health Units (31) that affiliated to Benha Health Administration. This seven Rural Health Units were chosen randomly 25% named: (Met El attar - Ramala- Met Radi- Met Alhovin- Damalo- Warwara and Bata).

Sampling:

A simple random sample was used in this study. Simple random sample from rural population attending to previously mentioned settings to emergency department, the total number of attended clients in the last year (2019) was 5324 and the sample size was calculated according to the following equation: $N = \text{Total population (5324)}$

$n = \text{sample size}$

$e = \text{Margin of error (MoE) (in proportion of one; if 5%, } e = 0.05)$

The sample size was (372).

Tools of data collection::

There are two tools are used; the first tool is interviewing questionnaire which is comprised of three parts to assess the following:

Part (I): It was concerned with socio-demographic characteristics of the studied rural population, included 7 questions.

Part (II) To assess knowledge of rural population about rabies and included 24 questions.

Scoring system:

(2) score for correct and complete, while (1) score for correct and incomplete, and (0) for don't know. For each area of knowledge, the score of the questions was summed- up and the total divided by the number of the questions, which converted into a percent score. Total score of knowledge = 48

The knowledge was considered good if the score of the total knowledge equals > 75 % (36 point), considered average if the

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percentage of total knowledge is 50-75% (24-36 point) and considered poor if it is less than 50% (<24 point).

Part (III): Concerned with reported practices of rural population toward animal bites & rabies and included 19 questions that divided into **(1) Behavior to deal with animals:** Which include (9) questions. **(2) First aid after biting:** Which included (5) questions. **(3) Wound care which included** (5) questions.

Scoring system:

The scoring system for reported practices were calculated as follows (2) score for always, (1) score for sometimes and (0) score for never practicing. The score of the items was summed-up and total divided by the number of the items, giving a mean score. These scores were converted in to percent score. The total practices score = (38 point) was considered satisfactory if the score of total practice $\geq 60\%$ (≥ 23 point), while considered unsatisfactory if it is $< 60\%$ ($< 23\%$ point).

The second tool: Likert Scale that is adopted from **(Bagheria et al., 2018)** and modified by the researcher to assess attitude of rural population regarding rabies and included 12 items.

Scoring system:

The scoring system for rural population attitudes were calculated as follows (2) score for agree, (1) score for slightly agree and (0) score for disagree. The score of items was summed-up and the total divided by number of the items, giving a mean score. The total attitudes score = (24 point) was considered positive if the score of the total attitude $\geq 60\%$ (≥ 14 point) while considered negative if it is $< 60\%$ (< 14 point).

The total attitude score (24 points) was considered positive if the score $\geq 75\%$ was (≥ 18 score), while considered neutral if it equals 50-75% was (12-18 score) and considered negative if it is $< 50\%$ (< 12 score).

Tools validity and reliability:

The validity of data collection tools was tested by 5 experts of Faculty Nursing Staff from the Community Health Nursing Specialists who reviewed the tool for clarity, relevance, comprehensiveness, applicability, easiness for implementation and all recommended modifications were carried out. The reliability was done by Cronbach's Alpha coefficient test. which revealed that each of the two tools consisted of relatively homogeneous items as indicated by the moderate to high reliability of each tool. The internal consistency of the knowledge was 0.929 while practices were 0.883 and attitude was 0.831.

Ethical consideration:

All ethical issues were assured; oral consent has been obtained from each rural population before conducting the interview and the rural population were given a brief orientation of the purpose of the study. Rural populations were also assured that all information gathered would be treated confidentially and used only for the purpose of the study. The rural population had the right to withdraw from the study at any time without giving any reasons.

Pilot study:

The pilot study was conducted to assess tools clarity and applicability. It has also served in estimating the time needed for filling the form of the study. It has also served in determining the needs of rural population which have been taken in consideration during developing the educational health program. It represented 10% of the sample (37 of rural population). No modification was done, so the rural population participants involved in the pilot study were included in the main study.

Field work:

The actual field work was carried out for data collection over a period of six months at the beginning of January 2021 to the end of June 2021. the researcher was available three days/week (Saturday, Tuesday and Thursday)

by rotation, from 9 Am- 12 Pm. Rural population were included in the program were as group consists of 5-6 rural population each session. The total rural population having a simple and full explanation of the aim and process of the study to obtain their verbal informed consent. The time of interviewing each rural population ranged between 30-45 minutes. The interview questionnaire conducted by researcher for data collection in the selected setting, after getting the necessary official permission; the researcher introduced herself and asked the questionnaire used simple Arabic language. Implementation done through sessions, the number of sessions was 6 (4 theoretical and 2practical), the expected duration of each session was from 30- 45 minutes for 4 hours. Motivation, open discussion and reinforcement were used during the lecture to enhance learning. A copy of health educational program was given as a gift to each rural population to use it as a future reference. All participants were cooperative with the researcher. At the end of each session open discussion was done to relieve any misunderstanding for the rural population and they were informed about the time of the next session.

Statistical analysis:

The collected data was analyzed, tabulated and presented in figures using the number and percentage distribution, mean and standard deviation using Statistical Package for Social Sciences (SPSS) version 20, Data were presented using proper statistical tests that were used to determine whether there significant relation or not and Chi-square (χ^2) was used for qualitative data. Pearson correlation coefficient (r) was used for correlation analysis and degree of significance was identified. Also P-value was used to determine significance of results as: following:

(p-value) highly significant (H S) $P < 0.001$. Significant (S) $P < 0.05$. Not significant (N S) $P > 0.05$.

Results:

Table (1): Shows socio-demographic characteristics of the studied sample and it clears that; 58.1% of the studied sample aged 30<45 years old and mean \pm SD was 33.54 ± 11.56 , 78.8% of them were females, in addition to 37.1% of them had secondary education and 73.4% of them were married. Regarding occupation; the result illustrates that 63.7 %of the studied sample didn't work and 38.5% were farmers. Regarding to the number of the family members; 40.6% of the studied sample had >5 members in their families and 42.7% of them had insufficient family monthly income.

Figure (1): Illustrates that; 66.9% of the studied sample had poor total score of knowledge score about rabies at pre-program implementation, moreover, 74.5% of them had good total knowledge score at post program implementation.

Figure (2): Illustrates that; 25.0% of the studied sample had positive total attitude score toward rabies pre-program implementation and this percentage increased to 86.6% post program implementation.

Figure (3): Illustrates that, only 17.7% of the studied sample had satisfactory total reported practices score toward prevention from rabies pre-program implementation and its percentage increased to 82.3% post program implementation.

Table (3): Illustrates that; there was highly statistically positive correlation between total knowledge score, total reported practices score and total attitude score among the studied sample pre and post program implementation ($p \leq 0.001$).

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Table (1): Frequency distribution of the studied sample regarding their socio-demographic characteristics (n=372).

Socio- demographic Characteristics	No	%
Age		
15<30 years old	106	28.5
30<45 years old	216	58.1
≥ 45 years old	50	13.4
	Mean ±SD33.54 ± 11.56	
Sex		
Male	79	21.2
Female	293	78.8
Educational level		
Illiterate	17	4.6
Basic education	131	35.2
Secondary education	138	37.1
University education and above	86	23.1
Marital status		
Single	66	17.7
Married	273	73.4
Widow	33	8.9
Occupation		
Working	135	36.3
Not working	237	63.7
If work (n=135).		
Student	23	17.0
Farmer	52	38.5
Employee	23	17.0
Free worker	17	12.6
Retirement	23	12.6
Number of family member		
2-3 members	121	32.5
4-5 members	100	26.9
members >5	151	40.6
Family monthly income		
Sufficient	157	42.2
Sufficient and Saving	56	15.1
Insufficient	159	42.7

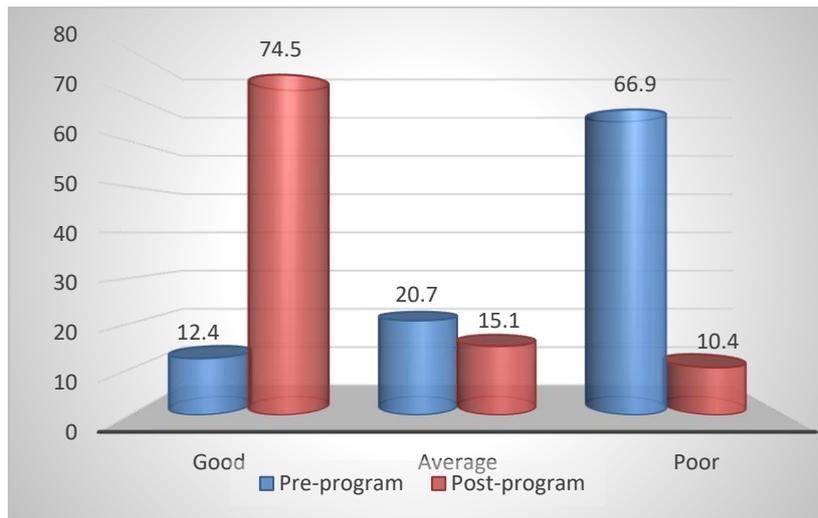


Figure (1): Percentage distribution of the studied samples' regarding their total knowledge score about rabies pre and post program implementation (n=372).

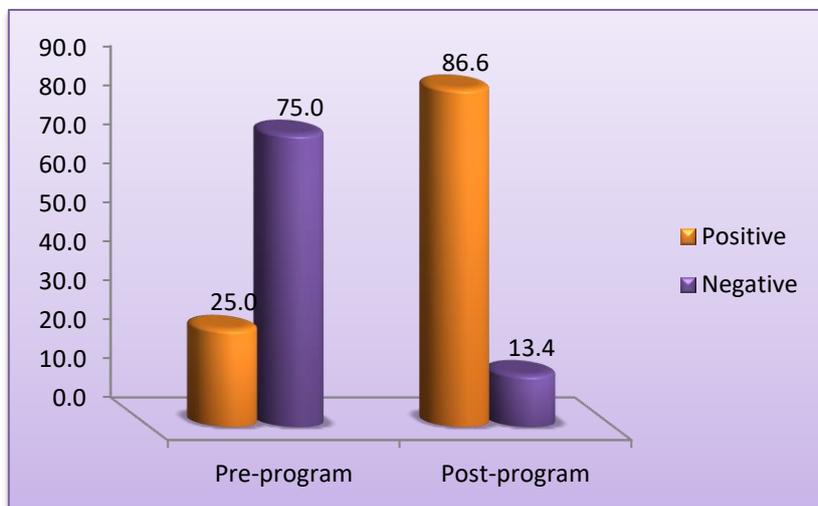


Figure (2): Percentage distrubtuion of the studied sample regarding their total attitude score toward rabies pre and post program implementation (n=372).

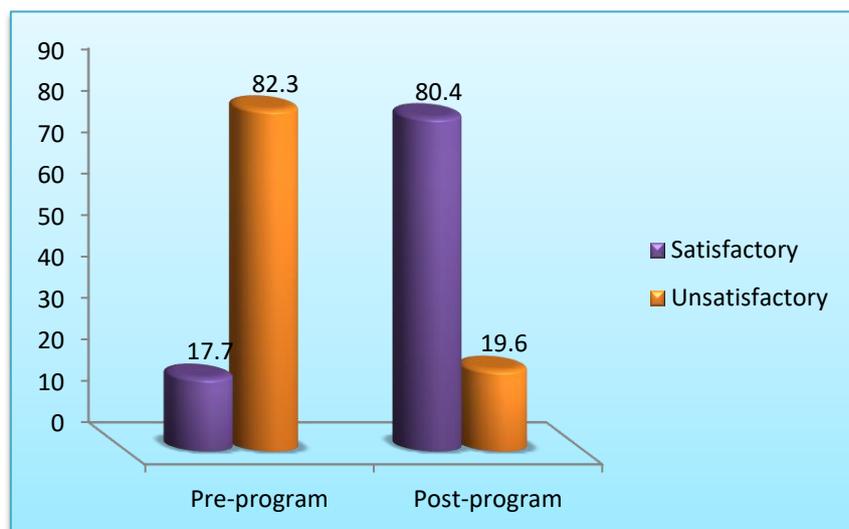


Figure (3): Percentage distrubtuion of the studied sample regarding their total reported practices score toward rabies pre and post program implementation (n=372).

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Table (2): Correlation between total knowledge score, total reported practices score and total attitude score among the studied sample pre and post program implementation (n=372)

		Pre program			Post program		
		Total knowledge	Total practices	Total attitude	Total knowledge	Total practices	Total attitude
Total knowledge Score	r	1	.815	.891	1	.894	.834
	p-value		.000**	.000**		.000**	.000**
	n	372	372	372	372	372	372
Total practices score	r	.815	1	.871	.894	1	.945
	p-value	.000**		.000**	.000**		.000**
	n	372	372	372	372	372	372
Total attitude score	r	.891	.871	1	.834	.945	1
	p-value	.000**	.000**		.000**	.000**	
	n	372	372	372	372	372	372

Highly statistically significance differences (p=≤0.001)**

Statistically significance differences (p=≤0.05*)

Discussion:

Regarding socio-demographic characteristics of the studied sample the current study showed that; more than half of the studied sample aged from 30<45 years with mean ± SD was 33.54 -11.56; this result agree with **Christopher et al., (2021)**, they conducted study on "Knowledge, Attitudes and Practices regarding Rabies among Community Members: A cross-Sectional Study in Songan Village, Bali, Indonesia" and found that mean ± SD of their participants was 32.063 ± 10.681.

Regarding to sex, more than three quarter of the studied sample were females, the finding agreed with **Muthunuwan et al., (2017)**, they studied "Preliminary Survey on Knowledge, Attitudes and Practices regarding Rabies" and found that the majority of their studied sample were females (91%). Also, agreed with **Hagos et al., (2020)**, they conducted a study on "Assessment of

Knowledge, Attitude and Practice towards Rabies and associated Factors among Household Heads in Mekelle City Ethiopia" and found that (77%) of their participants were females.

According to marital status more than two thirds of the studied were married, this finding came with the same line with **Mon et al., (2019)**, they conducted study on "Household's Knowledge, Perception and Self-Reported Practice on Rabies in Selected Townships of Myanmar" and found that (69.8%) of their participants were married. Also this result agreed with **Bihon et al., (2020)**, they conducted study on" Knowledge, Attitude and Practices in and around South Gongar) and found that (76.6%) of their participants were married.

As regards to occupation of the studied sample; The present study illustrated that more than half of the studied sample didn't work, this result came with the same line with **Khalaf, (2018)** who found that (51.1%) from

their studied sample didn't work. Because of most of the studied sample were females and they households. Additionally, the present study revealed that; more than one third of the studied sample wok in farming, this finding disagreed with **Christopher et al., (2021)**, they found that (55.9%) of their subjects working as farmers.

According to the studied rural population's family members. The present study illustrated that; slightly two fifths of their family had > 5 members, this finding agreed with **Bihon et al., (2020)**, they mentioned that (44%) of their family members >5 members. Also this finding disagreed with **Elkholy et al., (2021)**, they conducted study on "Knowledge and Attitude of Mothers regarding Rabies and its Preventive Measures, Banha City in Egypt" and found that (58.9%) of their participants were 4 – 6 of their family size.

Regarding to income of the studied sample, the present study revealed that; more than two fifths of the studied sample didn't enough income, this result agreed with **Sharaa & Ali, (2020)**, they studied "Impact of Educational Program about Rabies on Knowledge, Attitudes and Practices of School Children in Egypt" and showed that (40%) of their families didn't got enough income monthly. Also this finding disagreed with **Khalaf, (2018)** who mentioned that; (48.2%) of their studied households had enough income.

The current study revealed that increased knowledge of studied sample post program implementation than preprogram implementation from two thirds to three quarter, this finding agreed with **Sudarnika et al.,(2019)**, they conducted study on " The Success of the "Kasira" Rabies Cadres in Improving Community Knowledge and Attitudes towards Rabies" and found that(72.5%) of their responders knowledge

post program implementation, than(26.5%) preprogram of their responders knowledge.

The current study showed that; there was a high statistically significant correlation between total knowledge and attitudes of the studied sample related to rabies($P < 0.001$), this results in the same line with **Sharaa & Ali, (2020)**, they found that the educational program had positive impact on their participants. Also the finding agreed with **Abdela et al., (2017)**, they conducted a study on " Knowledge, attitudes and practices towards rabies in Dedo district of Jimma Zone, Southwestern Ethiopia: A community based Cross-Sectional Study in Southwestern Ethiopia" and reported that, there was high statistically significant correlation between total knowledge and attitudes of their studied sample. Also, this finding agreed with **Bouaddi et al.,(2020)**,they conducted study" Knowledge, Attitudes and Practices Regarding Rabies in El Jadida Region, Morocc" they found that association between total knowledge, total attitudes and total practices (KAP)of their subjects.

Additionally this finding agreed with **Sivagurunathan et al., (2021)**, they studied on "Knowledge, Attitude and Practice Study on Animal bite, Rabies, and its prevention in an Urban Community" and found that there was strong positive correlation between knowledge, attitude and practice of their participants.

Conclusion:

There was a highly statistically significant correlation between the studied rural population's total knowledge level and total practices level and total attitude level preprogram and post program implementation. The educational program succeeds in improving knowledge and enhancing practice of sample regarding rabies.

Recommendations:

- Providing health educational program about rabies in a wide scope of the population.
- Booklets should be available and distributed to all rural population about rabies prevention.

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أثير برنامج التثقيف الصحي لسكان الريف على الوقاية من داء الكلب

نورا عبدالمقصود طه- هويدا صادق عبدالحميد- دعاء محمد صبحي السيد- منى عبدالله عبدالمرضي

داء الكلب هو مرض فيروسي حيواني المنشأ قاتل ومشكلة صحية عامة خطيرة يمكن أن تؤثر على الجميع بما في ذلك البشر والقطط والكلاب والحياة البرية. وكان الهدف من هذه الدراسة هو تقييم تأثير برنامج التثقيف الصحي لسكان الريف على الوقاية من داء الكلب. وتم استخدام تصميم شبه تجريبي. وقد أجريت الدراسة في سبع وحدات صحية ريفية في مديرية صحة بنها من إجمالي الوحدات الصحية (31) (ميت العطار- الرملة- ميت راضي- ميت الحوفين- دملو- ورورة و باتا). وتم استخدام عينة عشوائية بسيطة من سكان الريف الذين يحضرون إلى الإعدادات المذكورة سابقاً لقسم الطوارئ ، وكان حجم العينة (372). واطهرت النتائج بأن هناك علاقة ذات دلالة إحصائية عالية بين المعرفة الكلية لسكان الريف ومستوى الممارسات الكلية ومستوى الاتجاهات الكلية قبل البرنامج وبعد تنفيذ البرنامج. وقد اوصت الدراسة بتوفير برنامج تثقيف صحي حول داء الكلب في نطاق واسع من السكان ، ويجب توفير الكتيبات وتوزيعها على جميع سكان الريف حول الوقاية من داء الكلب.