BENHA UNIVERSITY
FACULTY OF VETERINARY MEDICINE

BENHA VETERINARY MEDICAL JOURNAL

ROLE OF PUBLIC HEALTH EDUCATION IN IMPROVING THE PRACTICES OF EGYPTIAN HOUSEHOLDS TOWARD BRUCELLOSIS

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A B S T R A C T

A cross –sectional study carried out during the period between (2011 - 2012) in Shataonouf village, Ashmoun, Menufya Governorate in the Nile Delta region of Egypt, it was involved both descriptive and experimental research designs. Three hundred households involved in the experimental group and the same number in the control group. The study was carried out in two stages, pre public health education stage and post public health education stage and in between there was public health education only for experimental group a structured questionnaire and blood samples are taken from humans and animals in the two groups, in the two stages. From every household two persons (male and female) and all domestic animals were examined serologically. In Cows of control group, the prevalence of disease increased from (8.33% to 9.09%), while in the experimental group there was decline from (9.12% to 1.74%) and there was a decline in the prevalence of disease in the respectively in other animals from 7.4 to 2.46%, from 11% to 5% and from 7% to 3% in the experimental group. Also observed a decrease in the prevalence of the disease in other ruminants in the experimental group. In humans, the incidence of the disease in the control group by (BAPAT) it reached 6.5%, while by (RBPT) amounted to 6.33%. In addition, in the experimental group were identified 7.33% by (BAPAT), while (RBPT) recorded 6.83%. Public health education and veterinary extension through strategic communication plays an important epidemiological role in reducing hazards of exposure to infection and improving practices of Egyptian householders leading to minimizing animal and human brucellosis in Egypt

KEY WORDS: public health education, brucellosis, veterinary extension.

(BVMJ-24 [2]: 27-37, 2013**)**

1. INTRODUCTION

Brucellosis is still the most important occupational disease of veterinarians and those involved in farm animal production, causing a severe problem in the Mediterranean and Middle East countries as brucella infection causes major economic losses in livestock and serious impact on public health. More than 70% of Egypt's total livestock population is owned by small farmers, who keep a few Cows and buffalo in their household as a source of milk and dairy products for home consumption or to sell [1], Brucellosis is one of the major zoonotic diseases. Man may get infected through ingestion of infected animal products or by direct contact with infected materials. Besides its zoonotic importance, the disease causes great economic losses for live stock breeders through interference with the breeding programmes and decrease in milk yield.Health education is a difficult and extremely complex task. It cannot be regarded as effective if specific considerations referring to the community are not taken into account. These include culture, beliefs,

traditions, educational level, social status, occupation, age, etc. Hence, health education programmes should be aimed at targeted social groups. Because Brucellosis constitutes a real menace to animal production and reproduction as well as public health and Because the veterinary public health is the contribution to the complete physical ,mental ,and social Well-being of humans through an under standing and application of veterinary medical science, the importance of veterinary public health arises, this study was planned to determine the efficacy of veterinary public health through the strategic communication and veterinary extension in changing cultural heritage of the Egyptians and its rule in minimizing the disease in the animal and humans .

2. Materials and Method

The present study was carried out during the period between (2011 - 2012) in Shataonouf village, Ashmoun, Menufya Governorate in the Nile Delta region of Egypt, it was involved both experimental and descriptive research designs.

2.1. Experimental design:

2.1.1. Experimental group

Three hundred houses were selected out of the selected village. In each selected house, house holder was asked if any Cows, buffaloes, sheep or goat were kept in the house, the house holder was asked for oral a agreement to take him and his wife as a volunteer in an "animal disease" study, in the pre veterinary public health education it wasn't mentioned that the disease of interest was brucellosis, as this may affects the results of the study.

2.1.2. Control group:

The starting point of control group (the first house holder) to be number 5 house hold from the starting point of the experimental group, and the second house hold was after 10 houses and so on by the same sequence.

2.1.3 Samples and Data collection:

During the initial visit (from May till August 2011) from every household blood samples were taken from any person who is responsible for milking the animal or animal care taker and its animals (Cows, buffaloes, sheep, and goats). The structure designed questionnaire to know the practice of house holders, how they are dealing with infected or suspected to be infected as a risk factor filled.

During the period (from Jan till April 2012) after veterinary public health education the same sequence occurred in collecting samples and data.

2.2.Animal blood samples:-

Blood samples were taken from 2671 animals (Cows, buffaloes, sheep and goats) as in table (1) aseptically by vein puncture where the skin over the Jugular vein was prepared by clipping, defatted by rubbing with a swab soaked in alcohol, then disinfected by tincture iodine. About 10ml of blood were aseptically drawn from jugular vein into a sterile scew capped Mac-Carteny bottle. The bottles were left in room temperature in a slopping position to allow clot formation. The collected samples were marked, identified and transferred to the laboratory, were they were held in the refrigerator till the next day to give a chance for serum to separate. The clear serum was siphoned off and stored at 2-8^{o}c for 48h in the refrigerator till use, if they are to be stored longer, they should be frozen [2].

2.3. Human blood samples:-

Human blood samples were collected from 2400 humans (males and females) as in table (2) from brachial vein [3], after disinfection of the vein area with

alcohol, using disposable sterile syringes and needles. The obtained blood was transferred into sterile dry Mac-Carteny bottles and serum was collected as mentioned before.

2.4.Serological testes:

Antigens for serological tests:
Buffered acidified plate antigen:
It was obtained from animals and plant health inspection service, national veterinary service laboratories, ames lowa, U.S.A.

Rose Bengal Antigen:

The antigen was obtained from the serum and Vaccine research institute, Abbasia, Cairo, Egypt. The antigen consists of Br. abortus strain 99 cells in lactate buffer PH (3.65) stained with rose Bengal dye and usually stored at 4°C. it was brought outside the refrigerator before its use in the test to reach room temperature.

Serological examination for animal and human samples:

1- Rose Bengal plate test (RBPT): This test was done according to previous method [4].
2- Buffered acidified plate antigen test (BAPAT): The test was carried out according to previous method [5]**.**

2-Descriptive research design

It was conducted through a structured interviewing questionnaire to determine:

a. Socio demographic characteristics.
b. Risk factors
c. Knowledge Data
d. Attitude and practice
e. Data collection: On the visit the interview questionnaire was filled in by the researcher, after introducing himself to house holders at their houses and after informing house holders about the purpose of being a volunteer in an animal disease study without mention the name of the disease in the pre veterinary public health education stage and they have the right to refuse without giving any reason and asked them the questionnaire in a simple Arabic language. Questionnaire was administered to 2 member of house hold in charge of rearing the livestock, all interviews carried out in the evening or early in the morning when animals normally brought from the fields or before going to it. After veterinary public health education the same sequence occurred in collecting samples and data

*Limitation of the study***:**

No one refuse to participate in the study. All data will be organized, tabled and computerized

Public health education and communication:

Two way (Face to face) communication group discussion and seminars , using educational materials (several audio visual aids ,posters and fliers) applied only for experimental group on these topics by the following techniques:-

Methodology for health education of the public:

1-The content and form of the educational material and aids as well as means of communication have to be adapted carefully to the target populations and also to the health action about which information is to be prepared. Most of the target populations in different parts of the world where brucellosis is endemic are illiterate or only partly literate. Written words, pamphlets and newspapers are therefore of little value in such situations
2- Fortunately, radio and television are spreading fast in various countries and portable radio sets are being carried even by nomads. These mass media are available for health education provided

that the material is presented in a useful and interesting form.

3- Others, such as posters and wall pictures can be used on work premises to remind workers of various dangers or of precautions they have to take in handling potentially infected animals or products. It is important to enlist the aid of community leaders in the education campaign.

4-The topics treated in the rest of this section could each be the subject of educational communication, but each has to be broken down into very simple and easily comprehensible parts. Consideration of popular beliefs, however absurd they may appear, is important for the educator. If they are ignored, then resistance and lack of cooperation may follow.

5- The correction of wrong beliefs should be done appropriately but in a gentle manner. The economic benefits expected to result from the control of brucellosis should be brought out fully in the educational material [6].

3. RESULTS

In tables (1) and (2), the results of the 2 tests (BAPAT & RBPT) on serum derived from 288 *Cows* in pre public Health Education control group indicated that 24 (8.33%) were positive to BAPAT. On the other hands, 23 (7.98%) were to RBPT, while in pre public Health Education experimental group on serum derived from 296 Cows there were 27 (9.12%) positive to BAPAT while 25 (8.44%) were positive to RBPT and in post PHE experimental group there were only five (1.74%) positive to BAPAT , the same number were positive to RBPT where in post PHE controls group there were 26 (9.09%) from 286 positive to BAPAT and 25 (8.74%) were positive to RBPT. The results in table (3**)** revealed that out of 600 house holder , 39 (6.5%) were positive by BAPAT and 38 (6.33%) by RBPT in pre-public health education control group ,44 (7.33%) were positive by BAPAT and 41 (6.83%) by RBAT in the pre public health education experimental group and in the second stage of the study (after public health education) the control group prevalence of sero positive brucellosis persons increased from 39 (6.5%) by BAPAT and 38 (6.33%) by RBPT to 62 (10.33%) by BAPAT and 61 (10.17%) by RBPT when the experimental group sero positive Brucellosis persons changed from 44 (7.33%) by BAPAT and 41 (6.83%) by RBPT to 46 (7.67%) by BAPAT and 44 (7.33%) by RBPT.

In table (4) dealing with the infected or suspected to be infected animal results say that in control group in the first stage 73 (12.17%) will sell it to a neighbor while 389 (64.83%) will sell it in the market , 133 (22.17%) will sell to the butcher and only 5 (0.83%) will notify the authorities. Results were in second stage in the same group 71 (11.83%) , 292 (65.33) , 133 (22.17%) and 4 (9.67)% while in experimental group were in pre public health education stage 75 (12.5) , 391 (65.17%) , 130 (21.67%) and four (0.67%) , after public health education became 12 (2%) , 56 (9.33%) , 355 (59.17%) and177 (29.5%).

4. DISCUSSION

The results of the 2 tests (BAPAT & RBPT) on serum derived from 288 *Cows* in pre public Health Education control group indicated that 24 (8.33%) were positive to BAPAT while 23 (7.98%) were to RBPT, while in pre public Health Education experimental group on serum derived from 296 Cows there were 27 (9.12%) positive to BAPAT while 25 (8.44%) were positive to RBPT and in post PHE experimental group there were only five (1.74%) positive to BAPAT , the same number

Table (1) Results of serology in examined animal species (Control group) before and after public health education.

Stage	Cows					Buffaloes					Goats					Sheep				
	No.	BAPAT + ve		RBPT + ve		No.	BAPAT + ve		RBPT + ve		No.	BAPAT + ve		RBPT + ve		No.	BAPAT + ve		RBPT + ve	
		No.	%	No.	%		No.	%	No.	%		No.	%	No.	%		No.	%	No.	%
Pre PHE	288	24	8.33	23	7.98	274	21	7.66	20	7.29	88	15	17.04	14	15.09	52	7	13.46	7	13.46
Post PHE	286	26	9.09	25	8.74	273	24	8.79	22	8.05	77	12	15.58	11	14.28	61	11	18.03	10	16.39

PHE:-public Health Education

Table (2) Results of serology in examined animal species (Experimental group) before and after public health education.

Stage	Cows					Buffaloes					Goats					Sheep				
		BAPAT		RBPT			BAPAT		RBPT			BAPAT		RBPT			BAPAT		RBPT	
	No.	+ ve		+ ve		No.	+ ve		+ ve		No.	+ ve		+ ve		No.	+ ve		+ ve	
		No.	%	No.	%		No.	%	No.	%		No.	%	No.	%		No.	%	No.	%
Pre PHE	296	27	9.12	25	8.44	243	18	7.40	18	7.40	71	11	15.49	10	14.08	47	7	14.89	7	14.89
Post PHE	286	5	1.74	5	1.74	234	5	2.46	6	2.46	55	5	9.09	5	9.09	40	3	7.50	3	7.50

PHE:-public Health Education

Table (3) Results of serology in humans before and after PHE.

Test	Control group (600)				Experimental group (600)			
Results	Before PHE		After PHE		Before PHE		After PHE	
	+ve	%	+ve	%	+ve	%	+ve	%
BAPAT	39	6.50	62	10.33	44	7.33	46	7.66
RBPT	38	6.33	61	10.16	41	6.83	44	7.33

PHE:-public Health Education

Table (4): Dealing with infected or suspected to be infected animals.

group	control group						experimental group					
Stage	Before public Health education			After public Health education			Before public Health education			After public Health education		
Item	No.	+ ve	%	No.	+ ve	%	No.	+ ve	%	No.	+ ve	%
(1) sell it to neighbor	600	73	12.17	600	71	11.83	600	75	12.5	600	12	2
(2) Sell it in the market	600	389	64.83	600	392	65.33	600	391	65.17	600	56	9.33
(3) Sell it to the butcher	600	133	22.17	600	133	22.17	600	130	21.67	600	355	59.17
(4) Notify the authorities	600	5	0.83	600	4	0.67	600	4	0.67	600	177	29.5
(5) Calling private Veterinarian	600	427	71.17	600	429	71.5	600	431	71.83	600	589	98.17

PHE:-public Health Education

were positive to RBPT where in post PHE controls group there were 26 (9.09%) from 286 positive to BAPAT and 25 (8.74%) were positive to RBPT, While [7] obtained lower results , than that obtained in this study we can say that in control group the prevalence of disease increased from (8.33%) to(9.09%) ,while in experimental group which was exposed to public health education and communication there was a decline from 9.12% to 1.74% due to selling infected animals mainly to the butcher .

on the other hand results in *buffaloes* were slightly less than in *Cows* as in control group the positive raised by BAPAT from 21 (7.66%) to 24 (8.79%) ,but by RBPT from 20 (7.29%) to 22 (8.05%) in contrast the experimental group there were also a noticed decline from 18 (7.4%) to 6 (2.56%) by BAPAT and the same by RBPT. This may be due to the desire of the house holds to get rid off the infected animals due to feeling threatened after public health education., Contrary the slight decline in results of seropositive *buffaloes* comparing *goats* as the sero positive in control group were 15 (17.04%)by BAPAT and 14(15.9) in pre public health education stage and declined to 12 (15.58%) by BAPAT and 11 (14.28%) by RBPT. while in experimental group the positive declined from 11 (15.49%) by BAPAT and 10 (14.08) by RBPT to 5(9.09%) by BAPAT and the same by RBPT which indicates a good role of public health education but less than that effective role in *Cows* and *buffaloes* minimizing hazards of infection .The results of sheep showed that the positive reactors of *sheep* in control group increased from 7 (13.46%) by BAPAT and the same by RBAT to 11 (18.03%) by BAPAT and 10 (16.39%) by RBPT in contrast to the experimental group where the positive decreased from 7 (14.89%) by BAPAT , the same by RBPT to 3 (7.5%) by BAPAT and the same by RBPT

The more effective role of public health education in reducing infection in Cows and *buffalo* more than in small ruminants (*goat* and *sheep*)this agree with that concluded by [10] &[9] but defers from results obtained by [11], and this indicated that the critical role of small ruminants in maintenance and transmission of brucellosis in large ruminant and humans .

The results in table (3): revealed that out of 600 house holder , 39 (6.5%) were positive by BAPAT and 38 (6.33%) by RBPT in pre-public health education control group ,44 (7.33%) were positive by BAPAT and 41 (6.83%) by RBAT in the pre public health education experimental group and in the second stage of the study (after public health education) the control group prevalence of sero positive brucellosis persons increased from 39 (6.5%) by BAPAT and 38 (6.33%) by RBPT to 62 (10.33%) by BAPAT and 61 (10.17%) by RBPT when the experimental group sero positive Brucellosis persons changed from 44 (7.33%) by BAPAT and 41 (6.83%) by RBPT to 46 (7.67%) by BAPAT and 44 (7.33%) by RBPT

The results refers to that the veterinary public health education if done in good manner thought strategic steps of communications and veterinary extension leads to improve the practices of Egyptian householders toward infected or suspected to be infected animal .

In table (4) dealing with the infected or suspected to be infected animal results say that in control group in the first stage 73 (12.17%) will sell it to a neighbor while 389 (64.83%) will sell it in the market , 133 (22.17%) will sell to the butcher and only 5 (0.83%) will notify the authorities. Results were in second stage in the same group 71 (11.83%) , 292 (65.33) , 133 (22.17%) and 4 (9.67)% while in experimental group were in pre public health education stage 75 (12.5) , 391 (65.17%) , 130 (21.67%) and four (0.67%) , after public health education became 12 (2%) , 56 (9.33%) , 355 (59.17%) and177 (29.5%). This result reflects that:- the practice of selling the infected or suspected to be infected animal to a neighbor were not high in pre public health education stage 73 (12.17%) in control group , 75 (12.5%) in experimental

group reduced to 71 (11.83%) and 12 (2%) in the second stage, selling infected animal to the neighbor may explain increase transmission of *brucellosis* between households in the same village. while the practice of selling it in the market were more common as it were in the first stage of the study in the control group 389 (64.83%) and 391 (65.17%). This explains increase transmission of brucellosis between villages and inside the village this results is similar to that obtained by [9].The practice of selling infected or suspected to be infected animal after public health education reduced in experimental group to 56 (9.33%) while it increased in control group to 392 (65.33%) this reflects that ;Public health education gave positive results in reducing the risky practice of selling infected or suspected to be infected animal in the market or the neighbor .The practice of selling infected or suspected to be infected animal to the butcher in the first stage of study were 133 (22.17%) in the control group and 130 (21.67%) in the experimental group this may explain high prevalence of seropositive between abattoir workers and butchers.

In abattoir workers and butchers contract the disease from slaughter casting and cutting department [12], [13].

In the second stage of the study the control group were 133 (22.17%) without any change while in the experimental group it increased prominently although it's a risky practice , the explanation of that is:- from the house hold's point of View it was the less risky proper disposition to match what he gained of knowledge and desire in not losing money were to sell the animal to the butcher as a not diseased animal to gain a good price, and was believed to be pleased with his conscience, this wasn't a guess from myself but it was a statement from participation so it was the first risky practice which increased after public health education, due to embarrassment of financial barrier .

Notifying the authorities in the pre public health education in control group there were only five (0.83%) and experimental group were four (0.67%), this reflects that the participants found selling animal more economical and easier and gaining money at once instead of waiting one year and the compensation less than 30% of the price of the animal and receiving compensation my be after six months so the house holder sell the animal becomes it's easier and more economical, that accepts the results obtained by [9] .

Vaccination in combination with health education, improving not only farmer's health but their economic situation as well. [8] but improving current health policies with additional educational programmes is essential. [14].

The finding of BAPAT giving high results than RBPAT and can be used as a screen test agrees with the results obtained by [15].

> Serological tests have been used extensively through out the world for the diagnosis of brucellosis in man and animals, the Rose Bengal Plate Test (RBPT) and Buffered Acidified Plate Antigen (BAPAT) are of choice in the diagnosis and to minimize the risk of errors [16] [17].

Public health education may contribute to risk mitigation and should focus on costs. Effective strategies to reduce occupational exposure and consumption of un-heat treated dairy products [18].

It can conclude that Public health education should focus on cost effective strategies to improve the practices of Egyptian householders toward infected or suspected to be infected animal with brucellosis the public health education gives good results in the attitude and practice of the house holders if the ideal practice recommended to be done not in contrary with financial benefits of the rural householder.

5. REFERENCES

1. Aidaros, H. 2005. Global perspectives - the Middle East: Egypt. Rev sci tech Off int Epiz.2005; 24(2):589–596.

2. Alton, G.G; Jones, L.M. Angus, R.D and Verger, J.M. 1988. Techniques for the Brucellosis laboratory. INRA, Paris. ISEN, 1988.
3. World Health organization (WHO) 1989. Brucella Melitensis infection in man and all ruminants. Mediterranean zoonosis control center. Athens, Greece.
4. Morgan, W.J.B, Mackinnon, D.J. and Cullen, G.A. 1969. The Rose Bengal agglutination test in the diagnosis of brucellosis. Vet. Rec. 85: 636
5. Angus, R. D. and Barton, C.E. 1984. The production and evaluation of a buffered plate antigen for use in a presumptive test for brucellosis. Develop Bio. Stavdard, 56: 349-356.
6. World Health organization (WHO) (2006): *Brucellosis* in human, and animals. http://www.who.int/csr/resources/publications/Brucellosis.pdf
7. Salm, L.M.A. 2006. Epidemiological studies on *brucellosis* in animal and man with special reference to prevention and control. Ph.D. thesis, Department of Zoonosis. Fac. Of vet. Med. Benha University.
8. Jennings, G.J., Hajjeh, R.A, Girgis, FY, Fadeel, M.A., Maksoud, M.A., Wasfy, M.O., Sayed, N.E., Srikantiah, P., Luby, S.P. and Earhart, K. 2007. *Brucellosis* as a cause of acute febrile illness in Egypt. Transactions of the Royal Society of Tropical Medicine and Hygiene. 101(7): 707–713
9. Holt, H.R., Eltholth, M.M., Hegazy ,Y.M., El-Tras ,W.F., Tayel, A.A., Guitian J. 2011. *Brucella* spp. infection in large ruminants in an endemic area of Egypt: cross-sectional study investigating sero-prevalence, risk factors and livestock owner's knowledge, attitudes and practices (KAPs). BMC Public Health. May 19(11): 341.
10. John, K., Julie, F., Nigel, F., Rudovick, K., Dominic, K., Godfrey, S.M., Alastair, M., and Sarah, C. 2010. Quantifying Risk Factors for Human *Brucellosis* in Rural Northern Tanzania. PLoS Negl Trop Dis. 5(4): e9968.
11. Hegazy, Y.M., Moawad, A., Osman, S., Ridler, A. and Guitian, J. 2011. Ruminant brucellosis in the Kafr El Sheikh Governorate of the Nile Delta, Egypt: prevalence of a neglected zoonosis. PLoS Negl Trop Dis. 5(1): e944.
12. Mahgoub, K.G. 1995. Occupational brucellosis in Egypt. PhD thesis, faculty of medicine, Cairo University.
13. Meky, F.A, Hassan, E.A, AbdElhafez, A.M., Abdoul-Fetouh, A.M, and El-Ghazali , M.S. 2007: Epidemiology and risk factors of *brucellosis* in Alexandria governorate Eastern Mediterranean Health Journal. 13(3): 207
14. Namiduru, M., Gungor, K., Dikensoy, O., Baydar, I., Ekinci, E., Karaoglan, I. and Bekir, N.A. 2003. Epidemiological, clinical and laboratory features of *brucellosis*: a prospective evaluation of 120 adult patients. Int J Clin Pract. 57(1): 20-4.
15. Shalaby, M.N., Ghobashy, H.M., El-Bayoumy, E.M. and saleh, W.M. 2003. Prevention of Brucellosis among farm animal species in some governorates in Egypt 7th congress,Egyptian society for cattle diseases
16. Morgan, W. J. B. Mackinnon, D.J. and cullen, G.A. 1969. The Rose Bengal agglutination test in the diagnosis of brucellosis Vet. Rec. 85, 636.
17. Alton, G.G, Jones, L.M., and Pietz, D.E. 1975. Laboratory techniques in brucellosis.2nd ed. FAO/WHO, Geneva.
18. Seimenis A. 1998. Zoonosis: a social and economic burden. East Mediter. Health J. 4(2): 220–222.

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دور الصحة العامة في تحسين ممارسات الاسر المصرية تجاه داء البروسيلات

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[1] قسم الامراض المشتركة-كلية الطب البيطري-جامعة بنها، [2] معهد بحوث تناسليات الحيوان، [3]جمعة الاورمان

الملخص العربي

تم اجراء هذه الدراسة في قرية شطانوف، أشمون، محافظة المنوفيه في منطقة دلتا النيل في مصر خلال الفترة بين (2011 –2012). تم التطبيق على نموذج للبحث الوصفي و اخر للبحث التجريبي على300 منزل من المشاركين في المجموعة التجريبية ونفس العدد في المجموعة الاسترشادية (مجموعة مراقبة انتشار المرض) . أجريت الدراسة على مرحلتين ماقبل التعليم الصحى وما بعده وتم تطبيق التثقيف الصحي العام فقط على المجموعة التجريبية . تم ملء استبيان منظم و جمع عينات من الدم تم اخذها من الادميين والحيوانات في المجموعات من كل منزل لفحصها سيرولوجيا .وجاءت النتائج كالاتى:- بالنسبه للابقار في المجموعة الاسترشاديه ارتفع معدل انتشار المرض من (8.33٪ الى ٪ 9.09) بينما في المجموعة التجريبية كان هناك انخفاض في ذلك المعدل تراوح من (9.12٪ الى 1.74٪)وباقى الحيوانات بالتتابع من7.4٪الى2.46ومن11٪الى5%ومن7٪الى3٪ وذلك باختبار الانتيجين الحمضى المتوازن بعد التثقيف الصحى العام، كذلك لوحظ انخفاض في معدل انتشار المرض فى المجترات الاخرى في ا لمجموعه التجريبيه. فى الإنسان تم تحديدمعدل الإصابة بالمرض فى ا لمجموعة الاسترشاديه(المراقبة) باختبار الانتيجين الحمضى المتوازن(BAPAT) حيث بلغ6.5 ٪ بينما باختبار الروز بنجال السريع (RBPT) بلغ 6.33٪. وفى المجموعة التجريبية تم تحديد7.33٪ باختبار الانتيجين الحمضي المتوازن (BAPAT). بينما باختبار الروز بنجال السريع (RBPT) سجل 6.83٪. ومن ذلك نستنتج ان التثقيف الصحي والارشاد البيطرى من خلال الاتصال الاستراتيجى بالمربيين يلعب دورا مهما من الناحية الوبائية في الحد من مخاطر التعرض للعدوى من خلال تحسين ممارسات أصحاب الحيوانات بالمنازل المصرية مما يؤدى إلى التقليل من داءالبروسيلات فى الحيوان والإنسان في مصر.

(مجلة بنها للعلوم الطبية البيطرية: عدد 24 (2)، يونيو 2013: 27-37)