Health Care Communication

Biosci. Biotech. Res. Comm. 9(4): 762-768 (2016)

BBRC Bioscience Biotechnology Research Communications

The effect of education on knowledge and attitudes of people towards Brucellosis in Abdanan city during 2014-15

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ABSTRACT

Brucellosis is one of the most important diseases that are common between human being and animal and it is followed by socio-economic losses. One of the most important strategies coping with such disease is to train the society about such disease and to hold educational classes for health personnel and the cooperation between wards and treatments. This study aims to investigate the effect of educational interventions on knowledge, attitude and performance of public in Abdanan. The study was conducted in a semi-experimental form in 2014-2015 using an intervention group and a control group. 400 stockbreeders were studied in rural and urban areas of Abdanan and they were placed randomly in intervention and control groups. Information was gathered by a researcher conducted-questionnaire and educational interventions were conducted within two months once per two weeks for one hour and half. Data were analyzed by SPSS. The present research indicates that there is a significant difference between mean scores of knowledge, attitude and behaviors control and intervention groups to brucellosis and they were obtained before and after intervention. Therefore, educational programs that were conducted in this area had significant effect on promotion of knowledge, performance and attitude of stockbreeders towards brucellosis. Attitude of people towards the care and prevention from brucellosis has followed by high risk behaviors that increase epidemic disease. Therefore, it is suggested that authorities focus on attitudes of people towards health issues of stockbreeders.

KEY WORDS: BRUCELLOSIS, KNOWLEDGE, ATTITUDE AND BEHAVIOR, EDUCATIONAL INTERVENTION, HEALTH EDUCATION, ABDANAN

ARTICLE INFORMATION:

**Corresponding Author: ghavam39@gmail.com*
Received 29th Oct, 2016
Accepted after revision 13th Dec, 2016
BBRC Print ISSN: 0974-6455
Online ISSN: 2321-4007
Thomson Reuters ISI ESC and Crossref Indexed Journal
NAAS Journal Score 2015: 3.48 Cosmos IF : 4.006

Online Contents Available at: http//www.bbrc.in/

INTRODUCTION

Among 156 diseases identified in human being, 114 diseases are transferred (1.3%) by animals to human beings. Brucellosis is one of diseases common between human being and animal and in spite of extensive programs for fighting against brucellosis, as a zoonosis or the illness common between human being and animals the disease is still addressed in many countries even in developed countries in the world due to considerable importance of economy and public health and it is very important in medical and veterinary sciences (Zeinali et al 2012 and Orouji et al., 2012). While brucellosis is one of the most prevalent diseases common between human being and animal, Iran is one of the most infectious countries throughout the world and Middle East and such disease is considered as an important zoonosis in Iran and it is very important regarding its effect on human and animal health and economy(Esmaieli et al., 2013).

This disease has some complications in animals such as abortion, preterm delivery, infection inside uterus and it can be transferred to human being via breath, digestion system, skin scratches, conjunctivitis, intercourse (rarely) and blood transfusion (Rezaie, 2009) and it make liver, spleen and bones infectious. The infection resulted from *Brucella abortus* is very mild and among four types, *B.canis* is the least invasive for human being. *B.suis* is very pathogenic and causes severe complications such as abscesses in deep tissues. Infections resulted from brucellosis occur always earlier than clinical signs. The ratio of cases without symptoms of brucellosis to clinical signs may be 8 to 1 or even higher. There is no exact estimation about prevalence of brucellosis in the world due to insufficient information about occurrence of disease in human and animals in most countries or due to lack of diagnostic facilities. In addition, brucellosis is mild in human being in most cases and it is followed by unusual clinical manifestations that are not diagnosed correctly (Zeinali et al., 2012).

The more the prevalence of the diseases among animals, more humans will be contaminated. Such disease incurs many losses such as heavy costs and disability of people. In Iran, most patients with brucellosis are farmers and stockbreeders. In order to control disease, it is important to avoid eating suspicious dairy products and to use gloves at work place. The generalities of disease and how to prevent from it should be trained to risky people and public in local regions. One of the important ways for controlling the disease is to train health to public and how to prevent disease. The human affection to this disease can be prevented by essential educations to high risk people (Orouji et al., 2012).

Lack of information has been observed about the importance and distribution of disease. Costs resulted from the disease in developing countries are very heavy due to lack of effective criteria for general health, national animal health programs and diagnostic equipment and lack of public information about the disease. Such disease has signs similar to malaria, AIDS and typhoid in human being resulting in non-precise reports related to brucellosis (Capasso, 2002). Several factors can be effective on prevalence of brucellosis in different species such as geographical and climatic conditions, species, gender, age and diagnostic tests. However, it is said that *Brucella melitensis* was separated from human blood culture for the first time by Dr. Crandall (the head of Iran Pastor Institute) in 1932 (Esmaieli et al., 2013).

Most problems related to brucellosis in Iran are from *Brucella melitensis* that is mainly found in sheep and goat. Concerning that sheep milk is not used in pasteurization cycle of the country and its products are produced traditionally in villages (Esmaieli et al., 2013), many cases are reported in the country due to long boundaries and lack of proper control on animal imports, high number of tribes, traditional farming methods, lack of control on production and distribution of dairy products and lack of regular vaccination, test and slaughter of animals. In spite of measures taken for controlling the disease in many countries, it seems that brucellosis has not been decreased in human and animal throughout the world and such disease has been observed in some of countries that have not been contaminated. Most researches done on brucellosis have been in organizational and institutional levels and poverty has been rarely paid attention whereas the disease influences as such on farmers of the region (poverty) and it relates with the increasing number of brucellosis and its treatment (Anderson & Broch-Due, 2000).

In the study conducted by (Rezaie, Niknami, Tavafian, & Karami, 2013), the effect of an educational program was investigated on knowledge, attitude and preventive behaviors of rural women from brucellosis in Kangavar. Results suggest the significant difference between knowledge, attitude and performance of testing and control groups. Such difference was significant in pre- and post- tests as well. According to researchers, the educational program (conducted by the researcher) was effective on knowledge, attitude and performance of rural women in Kangavar.

In addition, (Orouji et al., 2012) studied the effect of health training program (based on Precede model) on reduction of brucellosis in rural regions of Khomein city. Results showed that mean scores of prone factors (knowledge and attitude), reinforcing factors and enabling factors in intervention group (in which 147 were affected by brucellosis among one hundred thousands) had statistically significant difference compared to control group ($p< 0.05$). 43 people were affected by bru-

cellosis (among one hundred thousands) within nine months in 2008 (P<0.05) and implementation of educational program based on Precede model can be effective on reduction of brucellosis.

Elizabeth (2015) evaluated knowledge, attitude and performance (KAP-study) of farmers about brucellosis in small animals in suburbs of the region of Dashnab in Tajikistan and identified possible risky factors. Results indicated that most farmers of the region (85%) had no information about brucellosis. Also, it was obvious that weak information about brucellosis resulted from low educational levels. Those who consult with their friends and relatives about treatment of animal disease had low information about such disease compared to those who visited the veterinarian. Most of respondents did not use any protective equipment when caring a cow that had abortion or when exposing to aborted parts. She believed that weak knowledge and high risk behaviors and tendency to learning encourage the application of educational programs as a part of control programs, (James, 2013).

Therefore, concerning abovementioned and high probability of disease incidence among farmers and rural people of Abdanan (one of cities of Ilam), the present study aims to determine the effect size of preventive education from brucellosis on knowledge and attitude of people towards brucellosis in 2013-2014. Another goal is that departments related to animal affairs, farmers and the society should be more aware about the importance of brucellosis. In addition, although there are many models related to training of diseases, the effect of education of knowledge, attitude and performance should be the base of all models and training brucellosis to this group is important due to low knowledge.

RESEARCH HYPOTHESES

1. Preventive education from brucellosis is effective on literacy of people of Abdanan
2. Preventive education from brucellosis is effective on sensitivity of people to brucellosis
3. Preventive education from brucellosis is effective on behaviors of people
4. Preventive education from brucellosis is effective on perception of problems resulted from such disease.

MATERIAL AND METHODS

This is an applied research based on intervention and aims to find a solution for social and human problems resulted from brucellosis. In addition, due to high performance and simplicity of control of the amount of information of people about brucellosis, pretest and posttest with educational intervention were used. The population under study is all people resident in villages of Abdanan city. In present research, in order to reach the samples in a geographical region and implement the program there, among 38 residential places with more than 20 households, urban regions of Abanar, Gandab, Anjireh & Tisheh Kand, Posht Ghaleh, Cham Kaboud (which had lower population) were chosen by random sampling. Villages of Posht Ghaleh, Cham Kaboud and Abanar were chosen as target regions for implementation of educational programs and Gandab, Anjireh and Tisheh Kand were chosen as case group. Concerning population of 48000 persons in the region (28000 rural and 20000 urban people), 400 farmers were selected according to ($N=\frac{Z^2S^2}{d^2}$).

In order to gather data, library and field methods were used. Therefore, theoretical basic and background were gathered from library by referring to books, theses, journals, textbooks, scientific websites for reaching recent studies and researches. Quantitative methods have been used to gather primary data. The main instrument for gathering quantitative data is a questionnaire consisting of 25 items in which open and closed questions have been included. This is a combination of researcher-made questions and adjusted version of the questionnaire used by (Lindahl et al., 2015).

The main questionnaire was confirmed by professors and experts in this field and a primary test was implemented to measure transparency and order of questions and to estimate the time required for answering questions. The revised version of the questionnaire was used with focus on knowledge and attitude of individuals in the present research. In order to obtain the sample size from the villages under study, the questionnaire was given to eligible people. 200 questionnaires were given to the case group and 200 questionnaires were given to control group. After gathering questionnaires from intervention and control groups in the first stage (pretest), educational program was implemented for intervention group in villages under study. This program was conducted for identification and fight against brucellosis with cooperation of staff of veterinary offices and health clinic of the region and participation of social workers of the villages under study.

Table 1: population of villages selected in the research

Name of village	Population based on census
Abanar	1309
Gandab	1027
Anjireh & Tisheh Kand	1091
Posht Ghaleh	1443
Cham Kaboud	1290

Table 2: comparing demographic variables in intervention and control groups						
Variable		Intervention group	Control group			Significance level
		Number	Percent	Number	Percent	
Gender	Man	121	60.5%	148	69%	0.596
	Woman	79	39.5%	62	31%	
Age	20-30	46	23%	52	26%	0.769
	30-40	61	30.5%	68	34%	
	40-50	72	36%	64	32%	
	Over 50	21	10.5%	16	8%	
Education	Illiterate	32	16%	35	17.5%	0.759
	Primary	77	38.5%	81	40.5%	
	Elementary	31	15.5%	35	17.5%	
	Diploma	42	21%	26	13%	
	University	18	9%	23	11.5%	

Social workers participated in the program because they had stronger relationship with residents. Educational sessions were held as lecture and group discussion by the group who fights against epidemic diseases and social workers of health clinics within 2 months for 60-90 minutes. Educational content includes importance of familiarity with brucellosis, the ways of transfer and prevention, socio-economic losses and complications of brucellosis in human being and wrong beliefs in disease transfer, familiarity with unhealthy removal of placenta and animal excreta and presenting educational materials for studying at home. Enabling factors included taking permission for killing infectious animals from veterinary organization and paying compensation to farmers, using veterinarians for training and awarding loan by agricultural Jihad department for converting traditional farms into industrial one and helping improvement of traditional farms. Encouraging staff of health centers, local influential people (members of council, governor of a rural district and other influential people), friends, informed relatives were considered as reinforcing factors. In addition, such educations were taught to one of family members of individuals under study to increase effectiveness of the program on target groups.

After four months, the questionnaire was given to both groups and final data were compared and analyzed. Firstly, data were entered SPSS and statistical tests such as independent T test, variance analysis with repetition

Table 3: comparing means of knowledge, attitude, reinforcing factors and enabling factors				
Variable		Mean and standard deviation of intervention group	Mean and standard deviation of intervention group	P value
Knowledge	Before intervention	42/1±9/2	42/3±10/5	0/978
	Immediately after intervention	79/0±5/0	-	
	After two months	83/5±10/0	52/0±15/7	p<0/001
		*p<0/001	*p<0/001	
Attitude	Before intervention	61/4±11/2	61/3±11/4	
	Immediately after intervention	-	-	
	After two months	69/6±7	57/7±10/8	p<0/001
		*p<0/001	*p= 0/517	0/538
Performance	Before intervention	54/7±9/3	56/8±9/7	0/704
	Immediately after intervention	83/8±8/0	-	
	After two months	85/0±6/1	57/2±10	p<0/001
		*p<0/001	*p= 0/586	
* Independent t test, *ANOVA test				

Table 4: results of Shapiro-Wilk test for normal distribution of scores

Variable		statistic	Freedom degree	Significance level
Knowledge	Experimental	0.978	400	0.001
	control		400	0.001
Attitude	Experimental		400	0.538
	control	0.517	400	0.441
Performance	Experimental	0.001	400	0.704
	control	0.585	400	0.145

Table 5: results of covariance analysis of scores of knowledge, attitude and performance

Stage	Sum squares	Freedom degree	Mean squares	F	Significance level	Effect size	Statistical power
Knowledge	1406.742	1	1406.742	55.505	0.000	0.731	1
Attitude	852.823	1	852.823	34.023	0.000	0.618	1
Performance	967.166	1	967.166	31.268	0.000	0.598	1

of observations, Mann-Whitney test, Chi square and Wilcoxon test were used to compare knowledge and performance of both groups before and after intervention. Significance level has been considered as 5% in all tests.

DATA ANALYSIS

In this section, obtained data were summarized and classified using statistical indices in order to describe features of the sample. Then, descriptive statistic such as mean, standard deviation related to research variables were used and hypotheses were either rejected or confirmed using indices of inferential statistic.

ANALYSIS OF DESCRIPTIVE STATISTIC

Inferential statistic

After description of variables and responses obtained from statistical population, hypotheses and the statistical tests used in this research were addressed in order to study hypotheses statistically via analysis of contexts.

Results of normalization test of dependent variables

Firstly, data normalization should be determined in order to use a statistical technique because parametric tests can be used for testing hypotheses if data distribution is normal and non-parametric tests will be used in case of abnormal data. In this stage, the testing results were addressed for each dependent and independent variables and based on results; the test was selected for research hypothesis. Before using covariance analysis, its defaults were studied. As seen in results of Shapiro-Wilk test in table 3, distribution of scores has been normal. Therefore data normalization is confirmed. Also, the equality of variances was studied by Levin test and showed that variance equality is confirmed for posttest scores of knowledge and performance except or attitude ($p<0.05$). Concerning the results and equality of sample size in both groups, covariance analysis is used as a parametric test.

RESULTS OF COVARIANCE ANALYSIS

As seen in results, there is a significant difference between mean scores of knowledge, attitude and performance in both groups. The high effect size shows that the scores are mostly different in educational intervention. Statistical power of 1 shows that the probability of the second type error has been zero and results can be generalized.

DISCUSSION

The aim of this study was to empower villagers in preventing from Malt fever. The statistical findings of this study showed that fist hypothesis: instruction in the ground of preventing from Malt fever illness impacts on the literacy level of Abdanan inhabitants in this ground. The results of covariance analysis showed that the average knowledge scores in posttest was significantly higher than control group score and regarding its high impact rate (72%), it could be concluded that training intervention could significantly promote people knowledge level. These results are consistent with findings of (Orouji et al., 2012) and (Khanian , Hashemian, & Shakeri, 2013).

Second hypothesis: instruction in the ground of preventing from Malt fever impacts on people sensitivity to Malt fever illness. Examining the second hypothesis shows that though instruction of preventing from and fighting with malt fever has changed people sensitivity and attitude towards this illness (0.001), but these attitude has not been statistically significant among control group and this means that this study participants more emphasize the illness after training. These results are consistent with findings of (Orouji et al., 2012) and (Khanian et al., 2013).

This illness could be transferred through direct contact with herd or bestial products or excreta. This study showed that herd excreta, sucking and direct contact with placenta and germ are important risk factors for catching the illness. Also, shambling herds at home is one of methods that this region people usually use as strategy of supplying family and neighbors meat. This too could be an important risk factor. The cases mentioned at the time of attending herd like cleaning the pound, fertilizing agriculture products with bestial dung, sucking milk, holding herds, helping in herd litter and butchering at home are significant. These findings are consistent with the results reported by (Mostafa & Hassan 2010), (Regassa et al., 2009) and (Zeinali et al., 2012) which showed that those stockbreeders who are in direct contact with bestial excreta and products like unclean milk, meat, wool and skin may be infected to Malt fever illness.

Third hypothesis: instruction in the ground of preventing from Malt fever illness is effective in perceiving problems due to this illness in Abdanan city people. Significant change in people attitude towards this illness (significance level= 0.538) showed that this level of training has been successful for changing the attitude of people towards the illness significance, but lack of significant increase in washing hands after milking could still be considered due to two factors of non-perception of illness risk and contamination of herd breast that this conclusion makes necessary more measurements for changing attitude.

Fourth hypothesis: instruction in the ground of preventing from malt fever impacts on people behavior. About boiling milk before consumption and sale, we should say that most of the time (usually and always, 95%) people boil this milk before consumption but if they intend to sell the milk in high volume, they assign this act to buyer (usually factories of dairy products or ice cream shops). However, studied people use an unsuitable method for boiling the milk so that they usually appropriate a time much less that the time required for pasteurization and only after boiling the milk and coming up of the dish content due to milk frothing turn the flame out. In case of herds becoming sick, stockbreeders perform in several ways.

If the illness cases are limited (especially in small herds) and their symptoms are known, they, themselves, measure for treating the herd illness or purchasing drug from veterinary drugstore. But, if no recovery is observed in herds or some cases of other herds infection to that illness is observed, they take herds to veterinarian or if possible wait for veterinarian periodical visits. But, in heavy herds like cow, since the possibility of loss is much more, first the veterinarian is informed and in case of failure do some measurements like selling herds or butchering (risky measurements).

In these cases, even if illness factor is something else, health department should show sensitivity to it since it is possible that at this time malt fever to be in its latency period. About disinfecting the place of keeping herds, it should be said that though more than 70% of people sterilize the location but sterilization time spaces, the rate of using materials and method of performing it are not so effective, yet stockbreeders regarding the number of kept herds cleaned the excreta of their herds keeping location. This issue requires more attention.

Finally, we can conclude that this illness is a threat for general health and social and economic welfare and life of animals either domestic or wild. The most important factors which were identified in this study were factors of attitude and performance of people about illness and health issues. In this study, most of the studied society kept their herd in their homes or in the nearest distance from their home and this means that most people in this study and their families are exposed to various illnesses common between human and herd including malt fever. Sometimes people are not aware of malt fever problems which require that how much people consider themselves exposed to the risk of catching this illness which was assessed in this research. The assessment results showed that awareness of both groups of test and control before training intervention in this regard was in a low level that this issue encounters fighting with the illness with problem. After training intervention, the studied society's awareness considerably increased. But in control group in which no training intervention has been done, no significant difference was observed in answers average. One of reasons and achievements of the present study is that such a study has not yet been performed in the region and so some firsthand information are provided for authorities and stakeholders of fighting with malt fever to be able to have a better performance in illness control in the studied region and healthier and safer products to be produced for presentation.

One of important issues in preventing from or fighting with such illness is people attitude towards that illness, i.e. if people's attitude towards that health problem or illness is negative and people see themselves exposed to risk, naturally battle with the issue will be easier.

Before training, most people believed in illness transfer through consuming not boiled and non-pasteurized dairy products and less believed in other transfer ways such as breathing dust and direct contact with animal contaminated tissues. The results of this study about attitude towards illness show that intervention group means after training have had a significant difference with control group. This indicates that training program has had a positive impact in promoting studied people attitude level by considering cultural features and relations between trainer and trainees. Also, it should be said that in the present study, pursuing and encouraging and behavioral motivating was performed by healthcare personnel and agriculture jihad propagators which creates a positive impact in increasing awareness and improving people's attitude towards malt fever alongside the training program.

REFERENCES

Anderson, D. M., & Broch-Due, V. (2000). The poor are not us: poverty and pastoralism in Eastern Africa: James Currey Ltd.

Capasso, L. (2002). Bacteria in two-millennia-old cheese, and related epizoonoses in Roman populations. Journal of Infection, 45(2), 122-127.

Esmaieli , H., Ekhtiarzadeh , H., Ebrahimzadeh, H., Partoie , R., Marhamati, K., Hamedi, M., & Khaji, L. (2013). Evaluating thhe national lan of fighting with sheep and goat brucellosis in Iran. Research Scientific Journal of Arak Medical University.

James, L. W. (2013). Studies on human brucellosis in the Mikumi selous ecosystem, Morogoro, Tanzania. Sokoine University of Agriculture.

Khanian , H., Hashemian, A., & Shakeri, A. (2013). Examining the impact of training plan on preventive behaviors from malt fever, scientific- research seasonal of health training and health promotion.

Lindahl, E., Sattorov, N., Boqvist, S., & Magnusson, U. (2015). A study of knowledge, attitudes and practices relating to brucellosis among small-scale dairy farmers in an urban and periurban area of Tajikistan. PloS one, 10(2), e0117318.

Orouji, M., Hashemi, S., Hazaveie, S. M., Cherkzi, A., Javaheri, J., & Moazeni, M. (2012). the impact of training plan on pattern of malt fever preventive behaviors in villagers of Khomein city. Journal of Research Development in Nursing and Midwifery, 51.

Regassa, G., Mekonnen, D., Yamuah, L., Tilahun, H., Guta, T., Gebreyohannes, A. Smits, H. L. (2009). Human brucellosis in traditional pastoral communities in Ethiopia. International Journal of Tropical Medicine, 4(2), 59-64.

Rezaie, H. (2009). Examining the impact of regular training program awareness, attitude and performance of stockbreeder women in relation to malt fever in selected villages of Kangavar city MA thesis. Iran: Tarbiat Modares University.

Rezaie, H., Niknami, S., Tavafian, S., & Karami, M. (2013). The impact of a regular training plan on attitude and malt fever preventive behaviors in rural stockbreeder women, monitoring seasonal.

Zeinali, M., Shirzadi, M., Hajrasouliha, H., & Sharifian, J. (2012). State guide of fighting with brucellosis (malt fever illness). Tehran: Raz Nahan.