Awareness of Personnel in Direct Contact with Animals Regarding Brucellosis

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Abstract : Brucellosis is still an endemic serious disease among domestic animals and human, constituting a public health problem in Kalyobia Governorate; hence this descriptive study was carried out to evaluate awareness (knowledge, attitude and practices) of Personnel in Direct Contact with Animals Regarding Brucellosis in Kalyobia governorate. A total of 300 persons of direct animal contacts were interviewed by using questionnaire form. The findings from 'the study revealed that, a significant difference between the 3 groups regarding knowledge (p value=0.001) with higher mean score among animal examinations. The attitude toward preventive measures of brucellosis was positive. Good knowledge and positive attitude especially from veterinary doctors not always translated into sound practices, mainly due to lack of supplies (masks, gloves, coat and vaccines). The general practices of animal breeders regarding, cleaning, disposal of animal waste and vaccination of animals was bad. This study Concluded that the awareness of studied participant was low, also the training and health education about brucellosis not enough with availability protective supplies and equipment. The study finding recommended that veterinal doctors should give health education to all work in direct contact with animal about preventive measures, and communication messages about brucellosis should be available in each veterinary health unit.
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1. Introduction

Brucellosis has been an emerging disease since the discovery of *Brucelia melitensis* by Sir David Bruce in 1887. The disease was found to affect British armed forces and the local population of Malta. Brucellosis has many synonyms derived from the geographical regions in which disease occurs e.g., Mediterranean fever, Malta fever, Gibraltar fever, Cyprus fever; from the remittent character of the fever e.g., undulant fever; or from its resemblance to malaria and typhoid e.g., typhomalarial fever or intermittent typhoid *(Manture et al., 2007).*

Brucellosis caused by six pathogenic species: *B. melitensis, B. abortus, B. suis, B.ovis, B.canis* and *B. neotomae. (Moreno et al, 2002),* however Human disease is caused mainly *by four species, B. melitensis* (found in sheep and goats), *B. abortus* (found in cattle), *B. suis* (found in swine) and *B. canis* (found in dogs). Disease from marine species has also emerged *(McDonald et al., 2006).*

Brucellosis can involve any organ of the body system, as it is a systemic disease. The symptoms of brucellosis are nonspecific. The majority of patients complain of fever, sweats, malaise, anorexia, headache, arthralgia, and back-ache. Human brucellosis is known for complications. Complications can be very diverse depending on the specific site of infection. Osteoarticular, genitourinary, gastrointestinal, nervous,

cardiovascular, skin and mucous membranes and respiratory complications are observed. Bone and joint involvement is the most frequent complication of brucellosis and occurs in up to 40% of cases in some series *(Mantur et al., 2007).*

So brucellosis is considered the most important Zoonosis of social and economic impacts, despite the control measures undertaken by national authorities in many developing countries *(Acha and Szyfres, 2001).*

The world Health Organization reported that, half million new human cases are reported annually worldwide and these numbers are greatly underestimate the true incidence of human disease as the actual number of cases is estimated to be at least 10 times the figures officially announced *(WHO, 2006 and Samartino, 2002).*

In Egypt, brucellosis has been reported and recorded as early as. 1939, however, attention was directed to the diseases during the 1960s with the importation of Friesian cows the incidence of brucellosis in the cattle on some farms become very high. The disease was reported also in buffaloes, sheep, goats, swine, camels, horses, donkeys, dogs and rats *(Refai, 2003).* And until now, brucellosis is still endemic serious disease among domestic animals and human in Egypt; in spite the attempts that were

implanted in the country to control the disease *(Hussein et al., 2005).*

Results from the Egyptian infectious disease hospital surveillance program suggest that brucellosis is a widespread and significant health problem in Egypt, since there is a substantial increase in the number of patients with brucellosis recorded in recent years, from 204 registered cases in 1995 to 3659 registered cases in 2004 *(E S U E, 2004).*

The apparent high burden of disease, coupled with data implicating consumption of dairy products as a risk factor for disease, indicate a need to evaluate the effectiveness of *Brucella* control programs in Egypt. Prior to laboratory and diagnostic upgrades, brucellosis was infrequently diagnosed; with most API patients being classified and treated as typhoid fever, which resulted in inappropriate antimicrobial therapy. The high frequency of brucellosis as a cause of coupled with the significant overlap of symptoms among patients with brucellosis and typhoid fever, emphasize the importance of laboratory-based diagnosis of patients with API *(Affifi et al., 2005).*

In Egypt, brucellosis caused mainly by *B. melitensis and B. abortus (Young, 1995).* But the most common brucella species recorded in Egypt *is B. melitensis* particularly biovar 3 *(Refai, 2002).*

The main sources of Brucella are infected animals or their products, such as milk, cream, butter, fresh cheese, ice cream, urine, blood, carcasses, and abortion products. Routes .of transmission of the infection to humans include direct contact with infected animals and there secretions through cuts and abrasions in the skin, by way of infected aerosols inhaled or inoculated into the conjunctiva sac of the eyes, or via the ingestion of un pasteurized dairy products. (*Memish, 2001*).

In Egypt, animal exposure occurs in all regions. In addition, un pasteurized dairy products are widely available throughout the country, and this resulted in the wide scale distribution of disease throughout the country *(Affifi et al., 2005).*

Community health nurse has important role in preventing and control of Brucellosis through providing rural population health education about the disease its causes, mode of transmission, signs and symptoms, and methods of control of infection. Also she must inform them about vaccination and its importance, *(Lundy et al., 2009).*

The nurse educates the infected individuals to modify their behavior and assist in the prevention of the spread of infection, Patient should be isolated and enteric precautions to be taken while admitted, concurrent disinfection of feces, urine and soiled articles with a suitable disinfectant, *(Basavanthappa, 2008).*

Then she must evaluate outcomes of infected patient based on the established plan of care.

Aim of the study:

The aim of this study is to evaluate awareness (Knowledge, attitude and practice) of personnel in direct contact with animal regarding brucellosis. This aim was achieved through the following objectives; assessing knowledge, attitude and practices of personnel in contact with animal, regarding brucellosis, helping in deployment of health education guideline to enhancement behavioral change concerning brucellosis.

Research question:

Is there a relationship between knowledge, attitude and practices of personal in direct contact with animal; (Animal examination, Animal breeders and abattoir workers).

2. Subject and Methods:
Research design

Descriptive design was used in conducting this study.

Setting (Study location)

This study was conducted in nine (9) veterinary health unit (Kafr Tosfa, El Menshaa, El Kourba, Asneet, El Bakasheen, Mosntounor, Meet Asem, Kafer El Hamm, El Shemot). The previous setting were selected by multi stage random sample and it was a representing (10%) from total veterinary health unit, at Kalyobia governorate. Each veterinary health unit. Serving around 11.000- 15.000 personnel in direct contact with animals of its catchments area. Then the home visit was used to assess studied group. (Animal breeders and abattoir workers) practice.

Sampling:

A systematic sampling technique was used to select 300 personnel in direct contact with animal (51 Veterinary doctors, 49 workers, 59 gassassins (traditional animal birth attendants), 105 animal breeders and 45 Abattoir workers. This number was represent (10%) out of (3000) personal in direct contact with animal. The total number 300 (studied sample lists) was obtain from attendance in previous setting during March, 2011 to August, 2011. The criteria of the studied groups were age more than 20 years, different educational levels, and marital status, occupied in a direct contact with animals, considered the most as susceptible group to brucellosis infection and they are engaged, In many practices leading to spread of brucellosis as, parturition, slaughtering, milking or breeding of animals.

Study tools:

Two tools were designed after reviewing related literature and magazine to assess knowledge, attitude and practices of personnel in direct contact, with animal. The first tool, an interviewing questionnaire. This sheet was consists of three parts,

first part, demographic characteristics of the studied participants was composed of (7) closed ended questions as age, sex, education level occupation, marital status, years of experience and training courses, the second part was included of (9) open and close ended questions and also multiple choice questions related to studied participants knowledge about brucellosis as definition, causative agent, types of animal affected, most vulnerable group for infection, symptoms and mod of transmission of disease in animals and human, preventive measures in human and animals and treatment, vaccination of animals. This following by scoring system, it was used for the knowledge items, a correct response was scored (1) and the incorrect (zero), the total knowledge score was calculated by summation of all previous items with total score (57) was computed. As regarding third part; it was included (3) questions which are consists of (13) items toward studied participants attitude as personal preventive measures covering (4 items) ranged from (0-4), personal protective devices covering (4 items) ranged from (0-4), and attitude for veterinary doctors toward personal protective devices during animal examination, waste disposal and health education covering (5 items) ranged from (0-5). Attitude score to all interviewed toward infection control measures was calculated where positive response was given score (1) and negative response was given (0).

Second tool

An observational checklist was designed to observe the studied participant practices, it includes personal protective devices when coming in contact with animal for all the studied participants as practices of veterinary doctors towards west disposal availability of supplies, health education message, sterilization of instruments, vaccination and causes of malpractice and also practices of animal breeders; as cleaning of breading places, mixing species, waste disposal, vaccination practices and if the children were helping them in animal breeding.

The observational checklist scoring system was the practice score through giving the best done: done score (2) sometime done score (1) and not done score (0).

This score was in most items concerned with personnel protective devices, west disposal and health education messages while the another score was given (1) when the practice correct done and (0) if not correct done or not done regarding vaccination practices of studied participant and it was covering (4) items ranged from, (0-8), and (9) items ranged from (0-15) related to veterinary doctors practice. The validity of contents were measured through Jury four experts in the field of community health nursing and medicines.

Pilot study:

It was carried out in the selected setting at which (10%) of the pre designated sample size, (5)

veterinary doctors, (4) workers, (15) animal breeders and (4) abattoir workers and fulfilling the studied sample criteria and they were interviewed to test tools applicability, clarity and time needed to fill two study tools. According to pilot study results, it was observed no modification was needed: Therefore the studied participants were choice in pilot study not excluded from the study sample.

Ethical consideration:

Approval and an informed oral consent from all studied participants were obtained after explaining the purpose of the study to each member of studied participants and each of them had been free to continue or with draw from the study co-operation. Privacy and confidentiality was taken in consideration for each one.

Procedures (field work):

The official approval was obtained to conduct this study from the faculty of nursing dean and from each veterinary health unit doctor. The letter presented to obtain approval included the title, aim of the study and setting was conducted. The data was collected from personnel in contact with animal were attendant selected veterinary health unit at Kalyobia governorate and study was conducted at a period of 6 months which started from March 2011 to August 2011 and attends two days/week for each unit from 9.00 Am to 2 p.m and also another two days were visited of the studied participants (animal breeders, assassins and abettor workers) inside the home to assess their practice while the veterinary doctor and workers were observed at unit during their work duration- the data was collected through an interview with each studied participants from 15 to 30 minutes.

Statistical design:

Data collected were organized, categorized, tabulated and analyzed using electronic computer. Descriptive statistics were applied as mean and standard deviation frequency and percentage. Other statistical tests such as chi-square test, correlation coefficient was calculated between knowledge, attitude and practices among (Animal examinations, Animal breeders and Abattoir workers). The p value was considered a highly significant if equal or more (0.001) and significant at (0.05).

3. Results

Table (1) shows that the common age of most of the interviewed direct animal contacts ranged from 20 to 40 years. Concerning education level 30% were illiterate followed by intermediate level of education 27%. As regards occupation, half of the interviewed direct animal contact were animal breeders 50% followed by animal examinations 35% and 15% were abattoir workers and the most of animal examinations were veterinarians and only 4.7% gassassins while most of the animal breeders were farmers 64%. The same

table revealed that the majority of studied participants had more than twenty years of experience in their work 71% and 76% from veterinarians doctors had training courses regarding preventive measures from brucellosis and more than three quarters (81%) of all studied participant were married.

Table (2): revealed that there was significant difference in between the 3 groups regarding all items of knowledge, attitude and practice by using test (*p* value=0,001) and this significant difference may be due the presence of animal examinators with high total mean score compared by animal breeders and abattoir workers .

Table (3): showed that there is no significant difference between who was trained about brucellosis and those not trained regarding their attitude and practice except in application of the health education there was significant difference *p* value=0,001.

Table (4): above raveled that there was significant difference *p* value=0.001 between practice of doctors with available supplies and those with no available supplies in relation their practice of using personal protective devices and waste disposal containers

4. Discussion

In the current study 300 personal direct animal contacts were interviewed from " different rural areas in Kalyobia governorate all interviewed to evaluate their knowledge, attitude and practice about brucellosis.

The interviewed people, including animal breeders (50%). Animal examinators (35%) and abattoir workers (15%) all were dealing with animals or their tissues directly, since they arc the most exposed group:; for acquiring brucellosis as mentioned by many studies *,Araj et al.,(2009)* conducted many studies in Lebanon on 597 persons in occupation dealing with animals with prevalence of (Immunoglobulin) and IgM antibodies for brucella was around 60% and *Meky et al., (2007)* conducted a case control study in Alexandria governorate ,they found that the most affected group were people working with animals and breeding goats.

In the present work the awareness was low about most items of preventive measures in both animals and human of the 3 interviewed groups inspite the significant difference in between them .i.e. high mean total score of preventive measures of both animal and human in animal examinators than animal breeders and abattoir workers (Table 2).So we have to formulate messages regarding preventive measures of brucellosis.

Veterinary, practices are unique environments that bring human into close contact with many different species of ill animals. In the practice environment, whether in a building or " in the field," veterinary personnel are frequently exposed to recognized and unrecognized infection pathogens, many of which are zoonotic (transmitted from animals). Veterinary personnel should wear protective outerwear and use gloves and other protective equipment appropriate for the situation *(NASPHV, 2006).*

In the current study there is weak correlation between the attitude and practice of veterinary doctors regarding many items of personal protective devices (wearing gloves, changing gloves, wearing mask and wearing coat), waste disposal, health education i.e. the positive attitude of veterinary doctors not always accompanied by good practices ,since there were malpractices of some doctors and this may explained by the unavailability of equipments (gloves, water, and waste containers,) and no compulsory decisions to take training courses or give vaccination.

There was no significant difference in the attitude and practice of trained veterinary doctors and not trained (Table 3), that make the impression that the problem of malpractice is the defect in availability of supplies to the veterinary doctors as in (Table 4) which revealed that there was good practice and proper performance towards personal protective devices (wearing gloves, protective coat and mask) and waste disposal practice of veterinary doctors with available supplies. So veterinary medical management with the government has to improve the veterinary services in the veterinary field and not only concentrate on increasing the awareness of veterinary doctors through training courses.

The majority of the animal breeders (74%) in the current study mixin -between different animal species in the same place. And this gives chance-; for contacts in between animals and facilitates transmission of brucellosis in between animals *(WHO, 2006).*

5. Conclusion

The present study was conducted the level of knowledge was low in relation to many items, especially knowledge about mode of transmission and preventive measures, Almost, the Attitude was positive regarding most the items of the infection control measures and even in the presence of good knowledge of the animal examinators, especially the veterinary doctors, this knowledge not necessary translated into good practice. Since there was a defect in supplies in the veterinary services (masks, gloves, waste containers, vaccines). The veterinary doctors not motivated to educate the people about the disease

Recommendations

- Collaboration between public health and veterinary medical managements to train both, the physicians and veterinary doctors to increase the health awareness through written guidelines, not only giving them just knowledge, but learning them the sound practices through training courses.

- Should use and motivate the role of the veterinary doctors as a health educators, especially in our rural community

Communication messages should include Brucellosis is serious common health problem affecting both human and animals, and messages should contain the following:

- Possible routes and sources of transmission in human and animal.

- Possible precautions to prevent infection in human, with focusing on hand hygiene, using possible protective measures during dealing with animals and food safety measures.
- Keeping children away from contact with animals.
- Follow possible hygienic practices in animal breeding.

Table (1): Distribution of studied participants characteristics (n=300).

Characteristics	No	%
Sex		
Male	240	80.0%
Female	60	20.0
Age		
≤ 20	9	3.0
20-	160	53.3
40-	112	37.3
60+	19	6.3
Education		
Illiterate	90	30.0
Read and write	47	15.7
primary	18	6.0
Intermediate	81	27.0
University	64	21.3
Occupation		
Animal breeders	150	50.0
Animal examination	105	35.0
Abattoir workers	45	15.0
Years of experience		
<5 year	27	9.0
5-	12	4.0
10-	48	16.0
20+	213	71.0
Training courses for veterinary doctor (51)		
Yes	39	76.0
No	12	24.0
Marital status		
Single	9	3.0
Married	242	81.0
Widow	19	6.0
Divorce	30	10.0
Type of occupation		
* Animal breeders	150	50.0
Farmer	96	64.0
Housewives	29	19.3
Others	25	16.7
* Animal examination	105	35.0
Veterinary doctors	51	48.0
Veterinary workers	49	46.0
Gassasins	5	4.7
* Abattoir workers	45	15.0

Table (2): Comparison between studied participants regarding their mean knowledge, attitude and practice scores.

Variables	Animal examinations	Animal breeders	Abattoir workers	*P* value
knowledge	Mean ±SD			
General knowledge	7.7±3.7	1.5±2..8	3.6±3.7	0.001
Mode of transmission in animals	2.3±l.6	0.4±i	0.6±0.9	0.001
Symptoms of brucellosis in animal	2±1.5	0.3±0.8	0.3±0.7	0.001
Mode transmission human	3.7±2.3	0.7±1.3	1.3±1.5	0.001
Symptoms of brucellosis in human	2.7±1.5	0.4±1	0.8±l.2	0.001
Preventive measures in animals	2.6±2	0.5±1.2	0.9i:l	0.001
Preventive measures in human	4.3±3	0.7±l.6	l.5±l.7	0.001
Attitude	Mean ±SD			P value
Preventive measures	3±l.4	0.8±l.5	l.9±l.8	0.001
Personal protective devices	3.2±0.9	2.4±l	2.4±l	0.001
practice		Mean ±SD		P value
Personal protective devices	3.4±3	1.4±2	!.5±2	0.001

P value < 0.05 is significant

Table (3): Comparison between attitude and practice scores and participant of veterinary doctor attending training causes regarding protective measures of person in direct contact with animal (N=51)

Variables	Trained 39	Not trained 12	*P* value
Attitude	Mean ±SD		
Personal protective devices	4±0	4±0.4	0.327
Waste disposal	1±0.3	1±0.2	0.541
Health education	1±0	1±0.2	0.327
Practice	Mean ±SD		P value
Personal protective devices	4±1.4	4±1	0.923
Waste disposal	1±1	1±0.8	0.862
Health education	1.5±0.6	0.2±0.8	0.001
vaccination	0.2±0.4	0.1±0.3	0.371
sterilization	I 8+0.6	1.6±O.S	0.162

P value < 0.05 is significant

Table (4): Comparison between practice score (Personal protective devices and waste disposal) of veterinary doctors and availability of supplies (N=51).

Variable	Yes(n=10)	Sometimes(n=10)	No(n=31)	Kruskal walls test
	Median(minimum-maxium)	Median(Minimum-maximum)	Median(Minimum-maximum)	P value
Personal protective devices	6(2-6)	5(4-5)	4(0-4)	0.001
Waste Disposal	2(0-2)	1(0-2)	0(0-2)	0.001

P value<0.05 is significant.

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