# KAP Study in Brucellosis among Personnel in Direct Contact with Animals in Fayoum Governorate

Thesis submitted

By

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# Abstract

Brucellosis is still an endemic serious disease among domestic animals and human, constituting a public health problem in Fayoum Governorate; hence this descriptive study was carried out to expose the existing knowledge, attitude and practices of the available direct animal contacts towards brucellosis in Fayoum governorate. A total of 300 persons of direct animal contacts were interviewed by using questionnaire form. The findings from the study revealed that, the general awareness about brucellosis was low (about 49.7% of the participants not heard about brucellosis) most of them were animal breeders and abattoir workers. There was significant difference between the 3 groups regarding knowledge (p value=0.000) with higher mean score among animal examinators. 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.

**Key words**: brucellosis, knowledge, practice, contact with animals, animal breeders, brucella species.

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## List of abbreviation

| | |
|---|---|
| AFI | Acute Febrile Illness |
| B. abortus | Brucella abortus |
| B.C | Before century |
| B.suis | Brucella suis |
| b.w | Body weight |
| BacT/Alert, BACTEC 9000 series, VITAl, ESP | Automated blood culture systems seem to shorten the time needed to detect organisms from blood and other body fluids |
| BAPA | Buffered acidified plate antigen |
| CFT | Complement fixation test |
| DFRA | Department for Environment, Food & Rural Affairs. |
| DNA | Deoxyribonucleic acid |
| EC | European commission |
| EDTA | Ethylenediamine tetra-acetic acid. |
| ELISA | Enzyme linked immunosorbent assay |
| ESUE | Epidemiologic and Surveillance Unit of Egypt |
| EU | the European Union |
| FAO | Food and Agriculture Organization |
| iELISAs | indirect Enzyme linked Immunosorbent Assays |
| IgG | Immunoglobulin G |
| IgM | Immunoglobulin M |
| M. melitensis | Micrococcus melitensis |
| MERC project | Middle East Regional Cooperation project |
| MMHED | Mexican Ministry of Health's epidemiology directorate |
| MZCP | Mediterranean Zoonoses Control Programme |
| NASPHV | National Association of State Public Health Veterinarians |
| OIE | Office International des Epizooties |
| PCR | polymerase chain reaction |
| PCR | Polymerase Chain Reaction |
| PHAC | Public Health Agency of Canada |
| PIMC | Primary Industries Ministerial Council |

| | |
|---|---|
| RBT | Rose Bengal plate test |
| SAT | Serum agglutination test |
| SAT | Standard Agglutination Test |
| S-LPS | Smooth-lipopolysaccharide |
| TAHRP | Tri-national Animal Health research Project |
| TMP/SMZ | Trimethoprim–Sulfamethoxazole |
| US | Union of Soviet |
| USA | United States of America |
| USDA | United States Department of Agriculture |
| WHO | World Health Organization |

# Introduction

Brucellosis has been an emerging disease since the discovery of *Brucella 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 epidemiology of human brucellosis has drastically changed over the past decade, several areas traditionally considered to be endemic—e.g., France, Israel, and most of Latin America—have achieved control of the disease. On the other hand, new foci of human brucellosis have emerged (**Pappas et al., 2006**), especially in the Eastern Mediterranean region, brucellosis is considered the main zoonotic disease in this region **(Oraby et al., 2007).**

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,1997 and Semenis,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; inspite 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 AFI patients being classified and treated as typhoid fever, which resulted in inappropriate antimicrobial therapy. The high frequency of brucellosis as a cause of AFI, coupled with the significant overlap of symptoms among patients with brucellosis and typhoid fever, emphasize the importance of laboratory-based diagnosis of patients with AFI (**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.melitensi***s** 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 their secretions through cuts and abrasions in the skin, by way of infected aerosols inhaled or

inoculated into the conjunctival sac of the eyes, or via the ingestion of unpasturized dairy products.
(**Memish, 2001).**

In Egypt, animal exposure occurs in all regions. In addition, unpasturized 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**).

# Aim of work

**Goal of study.**

"Aiming in the future to create a health education program to help in reduction of the prevalence of brucellosis among animal contacts**"**

**0bjectives**.

1-To identify knowledge, attitude and practices of persons in contact with animals regarding modes of transmission and risk factors of brucellosis.

2- To help in development of health education messages to help enhancement behavioral change concerning brucellosis.