



## ORIGINAL ARTICLE

# Assessing the Demographic factors of Brucellosis infected Patients Study Zone: West Isfahan Province

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### ABSTRACT

*Brucellosis one of the major health concerns which as an intricate problem has targeted the livestock in Isfahan province for years with great financial losses. The objective here is to investigate the demographic features of Brucellosis infected and evaluate the correlation with these diseases. The study data consist of the personal features of the infected individuals in the west Isfahan province during the years 2012 and 2013 have been recorded in the health center. The method adopted here is descriptive-analytic. To begin with, by using this data each one of the features in each year, the indexes are obtained and the diagrams are drawn through Excel S/W. Evaluating the manner of the association of the patient with the demographic features of the infected, indicate a 69.5% Male and 30.50% female in a 20-29 age group range of 28%. The occupations exposed to this disease consist of; homemaker, livestock farmer and farmer. About 73% of the infected had a direct contact with the livestock and about 69.5% had consumed the same livestock's non-pasteurized dairy product. In the regions prone to developing this disease, the rural areas in specific, the out brake is high which is directly related to the lifestyle, cultural set up and the type of livestock there. Hence, it is necessary to adopt and implement supervisory respect to dairy products in order to prevent the spread of this infectious disease.*

**Key words:** brucellosis, demographic features, livestock, livestock's non-pasteurized dairy product, west of Isfahan province.

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### INTRODUCTION

The Zoonoses diseases are of the group of diseases that exist naturally among the vertebrates and human which is transmitted with or without arthropods [8]. Among the types of pathogens, 832 types, that is (49%) of all are pathogenic [14]. Many other factors are involved in the spread of these types of diseases: the hygienic conditions, environment and climate, socio-cultural and economic set ups ..., where the geographic location (influencing the environmental climate) is the major contributor. Brucellosis is one of the widespread zoonoses in Iran [16]. Though, direct contact with livestock and consumption non-pasteurized dairy products are the most infectious factors in contracting Brucellosis, the climatic conditions, livestock husbandry methods, the education in livestock husbandry and the nutritional behavior/style of the population in any given region in addition to the type of widespread pathogens in every geographical area are the elements which make the diseases out brake patterns different in different societies [4]. Brucellosis is developed through a cocobacilli of aerobic gram negative [10] with main and secondary types among which *Brucella Melitensis* is the most common in human [6]. This disease is contracted through infected livestock or consumption of their non-pasteurized dairy products [11]. Regarding the hygienic and economical aspects its affects are seen on animal miscarriage and infertility in infected livestock, since the source of Brucellosis bacteria are the animals, Brucellosis infection rate in human indicates the spread of the same among the livestock. Isfahan Province is located in Between 30 degrees and 43 minutes and 34 degrees 27 minutes north latitude and 49 degrees 36 minutes to 55 degrees and 32 minutes east of the Greenwich meridian [2]. The topography of this province consists of western highlands of Zagros mountains and holes in the central and Eastern, south Eastern and Northern, regions [15]. This vast difference of elevation naturally has its climatic effect on precipitation and temperature of the province [1]. The Western regions of the province are prone to having the good potential for livestock husbandry. The cities of Fereydon Shahr, Chadegan, Khansar,

Fereydan, Golpayegan and Tiran make up this region. There are some regions that boarder the provinces populated with nomadic tribes like: Chaharmahal & Bakhtiary, Lorestan, Kohgiloieh and Boyerahmad. Constant traffic made among the nomadic tribes promotes the livestock and dairy product exchange in the cities bordering these provinces. It should be noted that the cattle industry is run by smallholders, in a traditional manner [3], hence a widespread epidemiologic profile of brucellosis in Western parts of Isfahan province, on the cattle in specific. This region is considered a risky one in this respect [18]. This study is conducted to identify and evaluate the connections of the demographic features of the infected, the results of which could assist the provincial authorities in health and veterinary medicine to improve the existing procedures in general.

## MATERIAL AND METHODS

The method adopted here is descriptive-analytic. The study data consist of the demographic features of the infected individuals like: gender, age, occupation, social status, record of contact with livestock, non-pasteurized dairy products consumption in the duration of the years 2011 and 2012 complied from Isfahan provincial health network. At the beginning for every variable in each one of the years an index is developed per every one thousand persons. Next, by applying the descriptive statistical indicators in Excel S/W the produced diagrams are drawn.

## RESULTS AND DISCUSSION

### The effect of brucellosis on gender

In 2011, 68% of the infected were, males and 32% were female (fig.1). In 2012, 71% of the infected were male and 29% were female with a two years average of 69.5% M and 30.5% F. This significant difference is due to the fact that most of the Males' main occupation is dealing with the livestock (12).

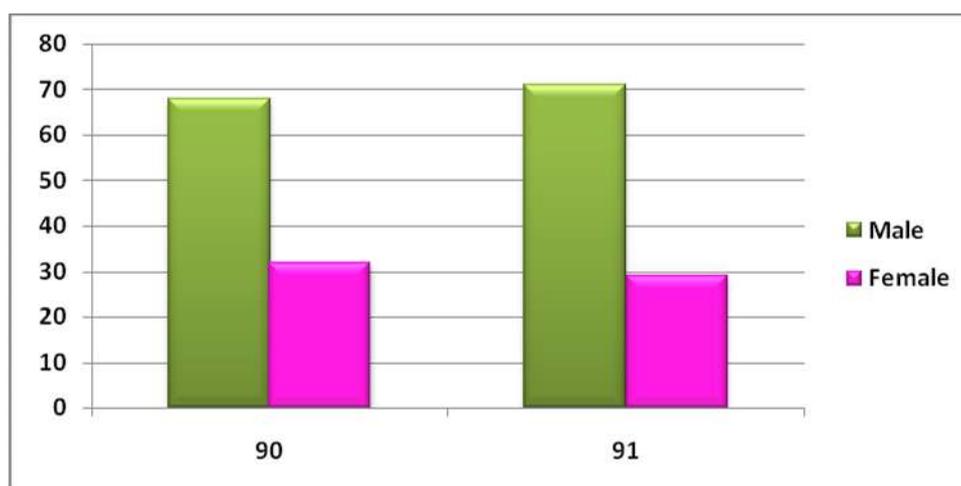


Fig 1- The effect of Brucellosis on gender

### The role of occupation in contracting Brucellosis

According to the bar-chart in Fig 2, during the years of this study the occupational categories infected to this disease with percentage working downwards, include: homemaker (2011, 28%-2012,21%),livestock farmer (2011,18%-2012,16%) farmer-livestock farmer (2011, 15%- 2012,13%), with a two year average of (homemaker 24.5 %, livestock farmer 17% and farmer-livestock farmer 14%). In general, since the homemakers, the women, are busy with animals and barn cleaning and milking in addition to field jobs are more vulnerable [17]. The livestock farmers and farmer-livestock farmers are ranked the next, respectively. Who are in close contact with livestock and might occasionally consume the non-pasteurized dairy products of the livestock. These occupations rank high in contracting this disease in comparison to the slaughterhouse workers and butchers, because the later groups are under severe restriction in their conduct by the ministry of health.

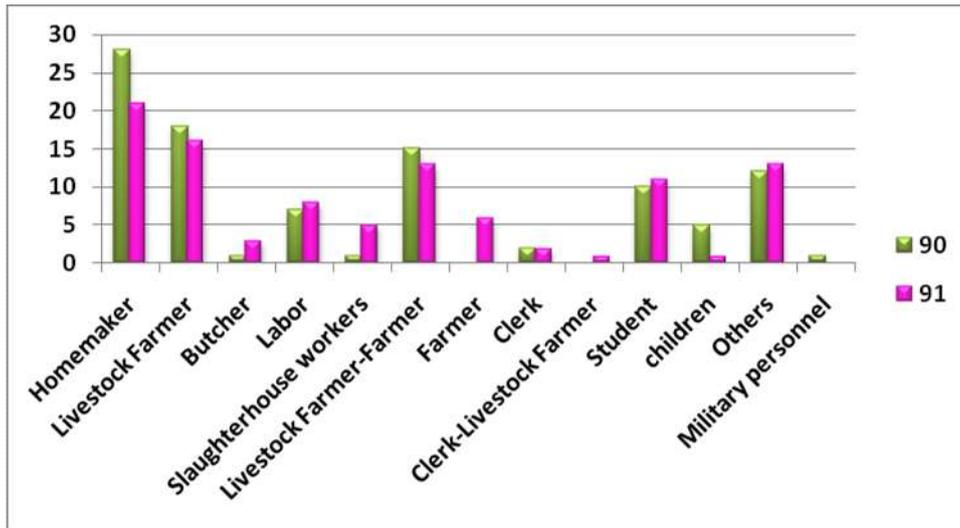


Fig 2- The effect of brucellosis on occupation

**The effect of brucellosis an age**

According to Fig 3 in both the years of study duration the 20-24 age group (2011, 27% and 2012, 29%) had the highest record in contracting this disease (an average of 28% for the whole study period). Here it is deduced that the young are more prone to the disease then the elder [7]. The above mentioned age groups are more exposed to the farm and animal husbandry affairs; hence, close contact with the potential disease carrying organism.

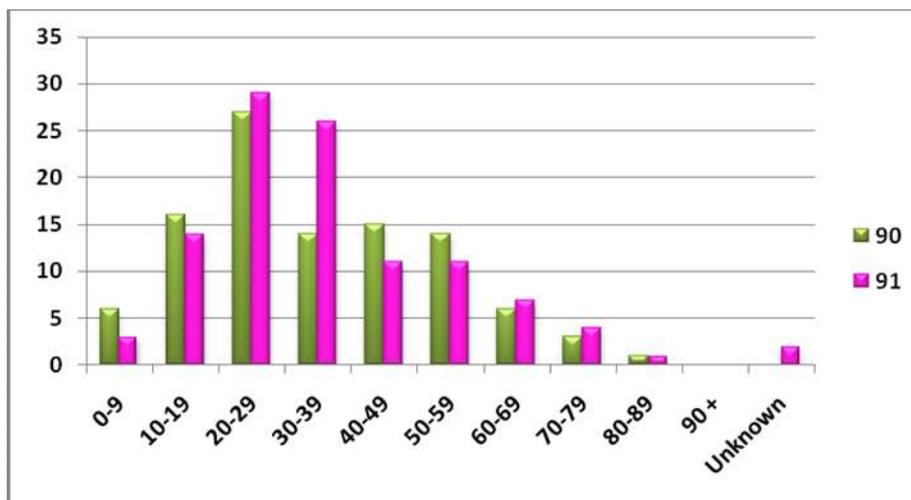


Fig 3- The effect of brucellosis on age

**The effect of directed contact with the disease carrying animal**

According to Fig.4 most of the patients had a direct contact with the disease carrying animal while conducting miscarriage on the pregnant cow, that is (2011, 76% and 2012, 70%) an average of 73% this population live in rural areas with known occupations which is full of direct or indirect animal contact. [13], found that the farmers’ behavioral patterns, lack of knowledge and awareness on Zoonoses leads to a risk increase in being vulnerable to this disease. Lejeune and Kersting [9], claim that farming industry is considered as one of the most risky ones where its employees are exposed to the diseases common in human and animals [9]. The people in farming industry, unfortunately, are usually illiterate and do not pay attention to the livestock health care like vaccination, separating the infected animal from the healthy ones, animal and barn hygienic etc. these facts indicate that proper animal husbandry contributes to the reduction or even prevention of infectious diseases in animals [5].

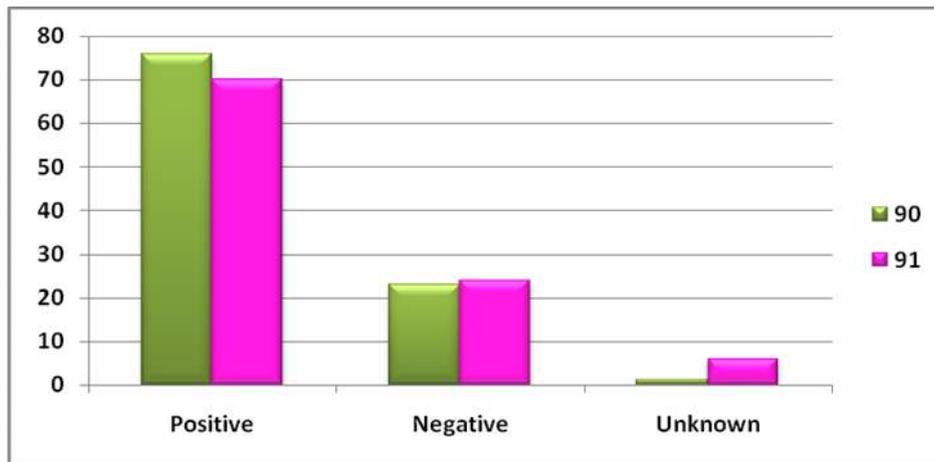


Fig4- The effect of direct contact with the disease carrying animal

**The effect of Brucellosis on the population who have consumed non-pasteurized dairy product**

According to Fig.5 most of the infected patients have consumed non-pasteurized dairy products (2011, 77% and 2012, 62%) with an average of (69.5%). Once more, this phenomenon is justified by the consumption of non-pasteurized dairy products produced in non-hygienic and primitive facilities [17].

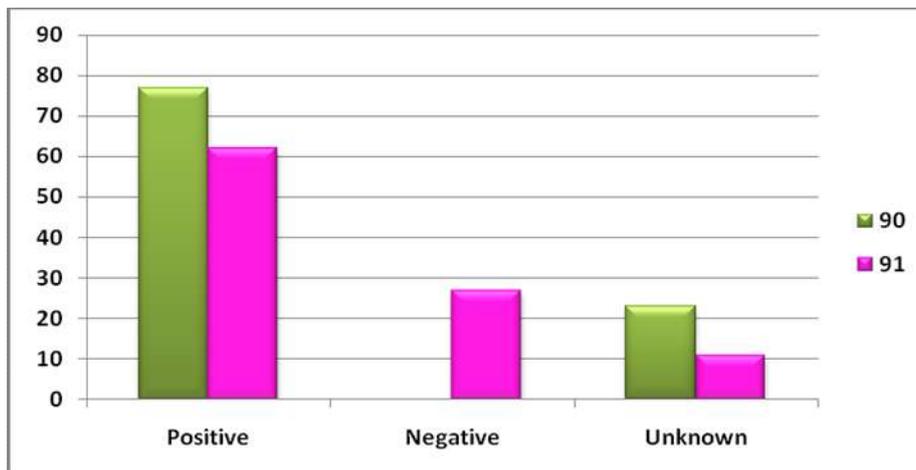


Fig 5.The effect of Brucellosis on the population who have consumed non-pasteurized dairy product

**CONCLUSION**

The favorable climatic conditions in the west of Isfahan province is the reason for development of rural areas which survive on livestock husbandry and farming. Sharing provincial borders with the three provinces mentioned earlier, and heavy livestock traffic at the borders has in a sense promoted this region’s development. The living style and the environs of the inhabitants in this region are traditional and not hygienic and the same is true for their livestock. Hence, they are exposed to more risk when it comes to brucellosis, and when compared to inhabitants of other regions in the province. The outcome of the evaluation conducted in this study indicate that: regarding gender, Men, regarding occupation, Homemakers and regarding age, 20-29 Age group are the most prone to categories to become infected by brucellosis as far as the contact with disease carrying animal and consuming non-pasteurized dairy products are concerned.

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