

## BRUCELLOSIS IN GJILAN REGION DURING 2000 – 2012

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### ABSTRACT

Brucellosis is a zoonotic infection caused by the bacterial genus *Brucella*.

The bacteria are transmitted from animals to humans by ingestion through infected food products,direct contact with an infected animal,or inhalation of aerosols.The disease is an old one that has been known by various names,including Mediterranean fever,Malta fever,gastric remittent fever,and undulant fever.Humans are accidental hosts,but brucellosis continues to be a major public health concern worldwide and is the most common zoonotic infection.

**Purpose:**To show epidemiologic characteristic of brucellosis in Gjilan region during 2000 – 2012.

**Material and Methods:** Used are the data's from Regional Institute of Public Health in Gjilan.During data processing were used retrospective analytic methods.

**Results:**During 2000-2012,in Gjilan region were registered 117 positive cases of brucellosis or 9.18 % from 1275 test cases.Brucellosis was registered during all the year,as sporadic cases or epidemic form.The great majority,111(94.8%)of patients were from 3 municipalities of Gjilan region:Gjilan,Kamenica and Vitia.The majority of patients (82.91%) were inhabitants of rural regions.The males were significantly dominant(64.11%).Most of patients were in age group 10-19 years(23.84%),30-39years and 40-49 years (18.81%)and 50-59years (11.12%).The patients were mostly hospitaliyed during spring season and summer season,especially in April(11.12%),June(26.50%), July(9.41%)and August(12.82%).The leading symptoms and signs of the disease were fever,night sweating,weakness,headache,arthralgia and myalgia.All our patients were treated with a combination of streptomycin or gentamicin with doxycycline.

Complications not documented and all our patients were cured.The diagnosis of brucellosis was confirmed by positive results by serology testing (Rose-Bengal plate agglutination,Wright test).

**Conclusions:**Brucellosis is a serious,actual and growing public health problem in all Gjilan region.

**Key words:**Brucellosis,epidemiologic characteristic,growing public health problem,Gjilan region.

## Introduction

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Brucellosis is a zoonotic infection caused by the bacterial genus *Brucella*. The bacteria are transmitted from animals to humans by ingestion through infected food products, direct contact with an infected animal, or inhalation of aerosols.

The disease is an old one that has been known by various names, including Mediterranean fever, Malta fever, gastric remittent fever, and undulant fever.

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*Brucella* organisms, which are small aerobic intracellular coccobacilli, localize in the reproductive organs of host animals, causing abortions and sterility. They are shed in large numbers in the animal's urine, milk, placental fluid, and other fluids. To date, 8 species have been identified, named primarily for the source animal or features of infection. Of these, 4 have moderate-to-significant human pathogenicity:

- *Brucella melitensis* (from sheep; highest pathogenicity)
- *Brucella suis* (from pigs; high pathogenicity)
- *Brucella abortus* (from cattle; moderate pathogenicity)
- *Brucella canis* (from dogs; moderate pathogenicity)

Humans experience only limited risk from wild animals, mainly because of lack of proximity or intimate contact and infrequent use of milk and meat products from these animals. Concerns have been voiced that interaction of wild animals with domesticated ones may lead to infection of agricultural herds, though supportive evidence is quite limited.

The global burden of human brucellosis remains enormous: The infection causes more than 500,000 infections per year worldwide. Interest in brucellosis has been increasing because of the growing phenomena of international tourism and migration, in addition to the potential use of *Brucella* as a biologic weapon. Familiarity with the manifestations of brucellosis and knowledge of the optimal laboratory studies are essential for the recognition of this reemerging zoonosis.

Brucellosis is a disease of mainly cattle, swine, goats, sheep and dogs. The infection is transmitted to humans by animals through direct contact with infected materials like afterbirth or indirectly by ingestion of animal products and by inhalation of airborne agents. Consumption of raw milk and cheese made from raw milk (fresh cheese) is the major source of infection in man. Most of the fresh cheeses are sheep and goat cheese. Next to this it is considered to be an occupational disease for people who work in the livestock sector. Human-to-human transmission is very rare.

The most rational approach for preventing human brucellosis is the control and elimination of the infection in animals. Pasteurization of milk is another protective mechanism. Vaccination of cattle is recommended for control of bovine brucellosis in enzootic areas with high prevalence rates. The same holds true for goat and sheep brucellosis. Eradication by testing and culling is the way to the elimination of brucellosis in regions with a low prevalence. Brucellosis is a major concern for most of the countries in the Balkans. Brucellosis has been a significant public health concern in Kosovo.

## Aim

To analyze the epidemiological characteristics of human brucellosis in region of Gjilan in period 2000 to 2012 and the most important factors affecting its emergence and spread.

## Methods

Public sources of data on brucellosis were used, including official reports of infectious diseases and epidemics, as well as monthly and annual reports of the Kosovo Institut of Public Health.

The material is the number of cases of the diseased from brucellosis in humans, where the source of the data for this research, was collected from:

- ▶ Epidemiological questionnaires,
- ▶ Reports of communicable diseases,
- ▶ Annual reports of the NIPHK for 2000-2012.

## Results

During this period, there were 117 registered cases of brucellosis in Gjilan region or 9.18 % from 1275 test cases. The highest number was registered in 2000, with 24 cases (20.52%) or Mb.9.23/100000 inhabitants, and in 2011 were registered 21 cases (17.9%) or Mb.8.07/100000 inhabitants. While the lowest number was registered in 2006-2008 with 1 case (0.85%) or Mb.0.38/100000 inhabitants. (Table 1, Graph 1).

**Table 1.** Movement of cases and scale of morbidity of brucellosis in Gjilan region, by years, 2000-2012

Years	N	%	Mb/100000
2000	24	20.52	9.23
2001	11	9.40	4.23
2002	16	13.67	6.15
2003	17	14.52	6.53
2004	9	7.69	3.46
2005	0	0	0

2006	1	0.85	0.38
2007	1	0.85	0.38
2008	1	0.85	0.38
2009	4	3.41	1.53
2010	2	1.70	0.76
2011	21	17.9	8.07
2012	10	8.54	3.84

<b>Total</b>	<b>117</b>	<b>100%</b>	<b>45</b>
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[Graph](#)

1

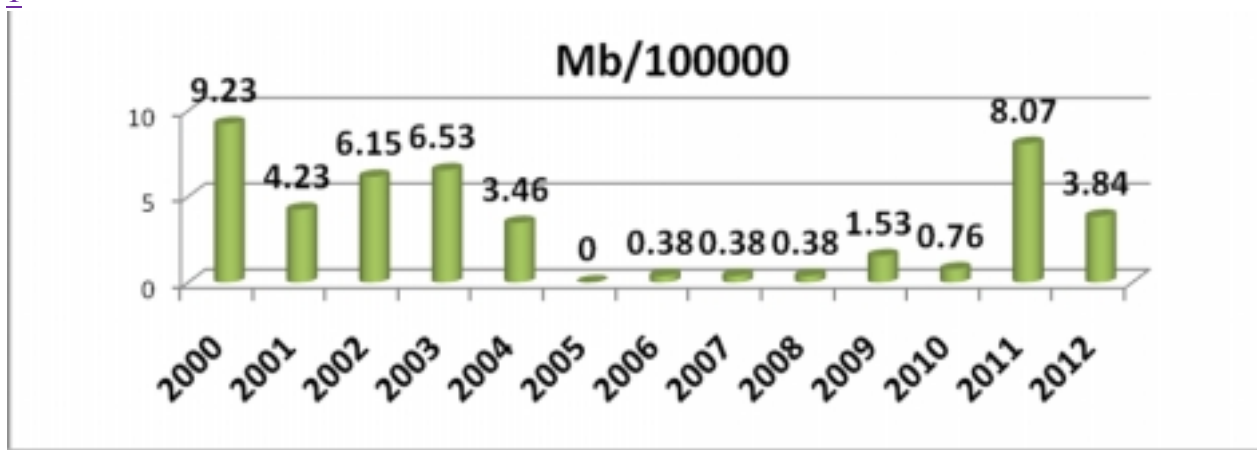
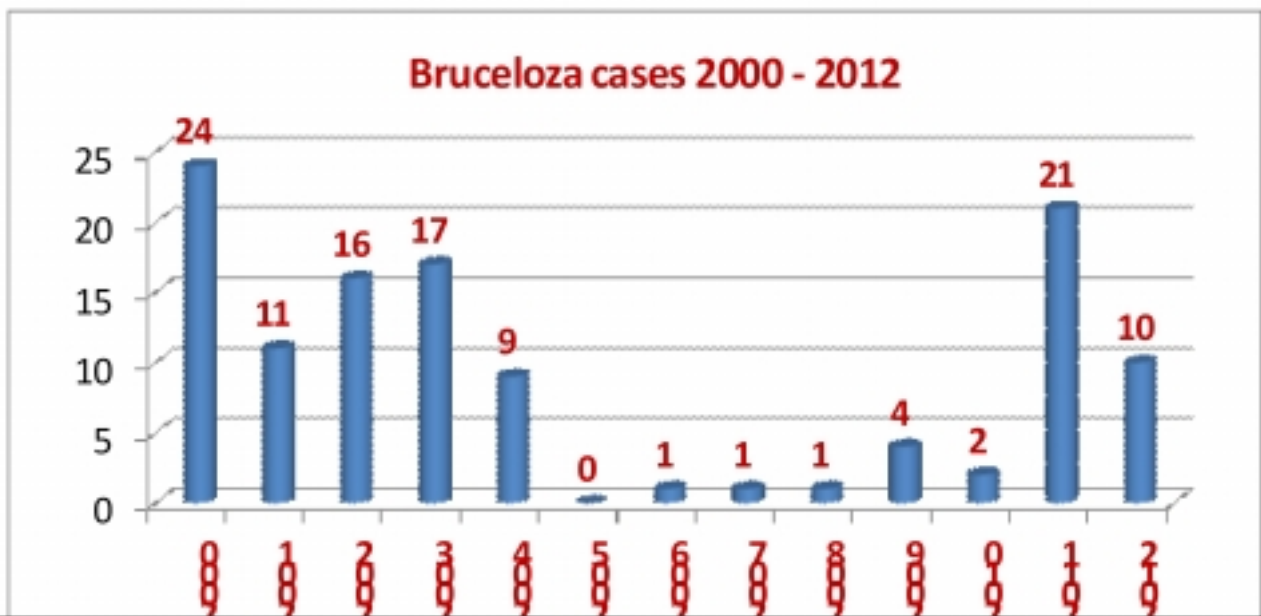
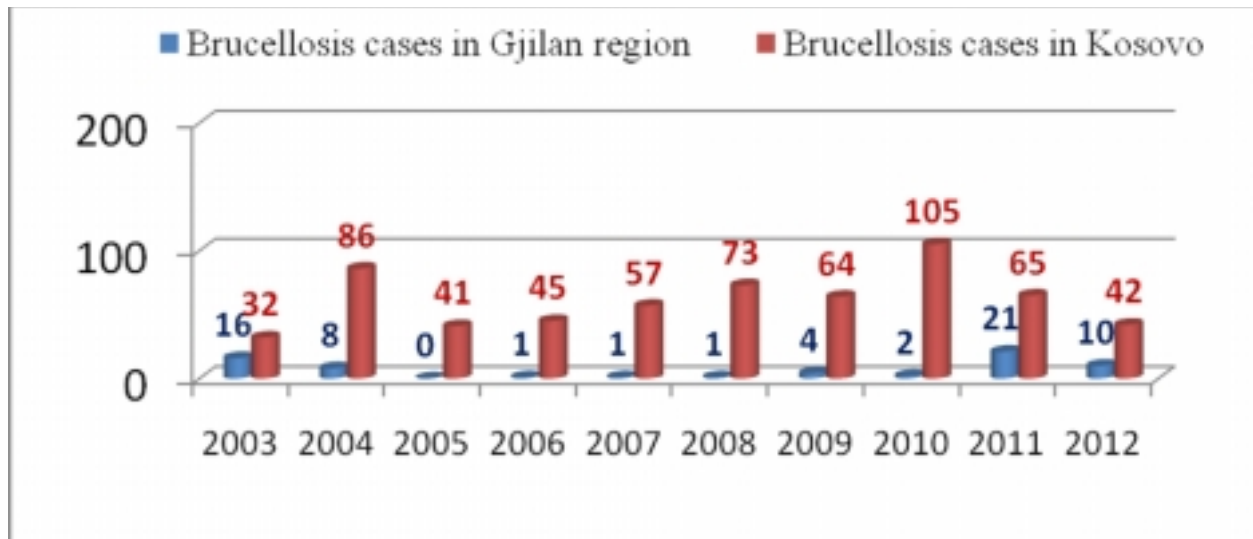


Figura 2



In 2000-2012, 117 human brucellosis cases were recorded in Gjilan region. The great majority, 111 (94.8%) of patients were from 3 municipalities of Gjilan region: Gjilan (89 cases or 76.07%), Kamenica (8 cases or 6.83%) and Vitia (20 cases or 17.09%). The number of cases reported annually is shown in [Figure 2](#).

Figura  
3



[Figura 3](#) presents human brucellosis cases were recorded in Republic of Kosovo (610 cases) and Gjilan region, (117 cases 9.18 % from 1275 test cases), in the period 2000-2012.

Figura 4

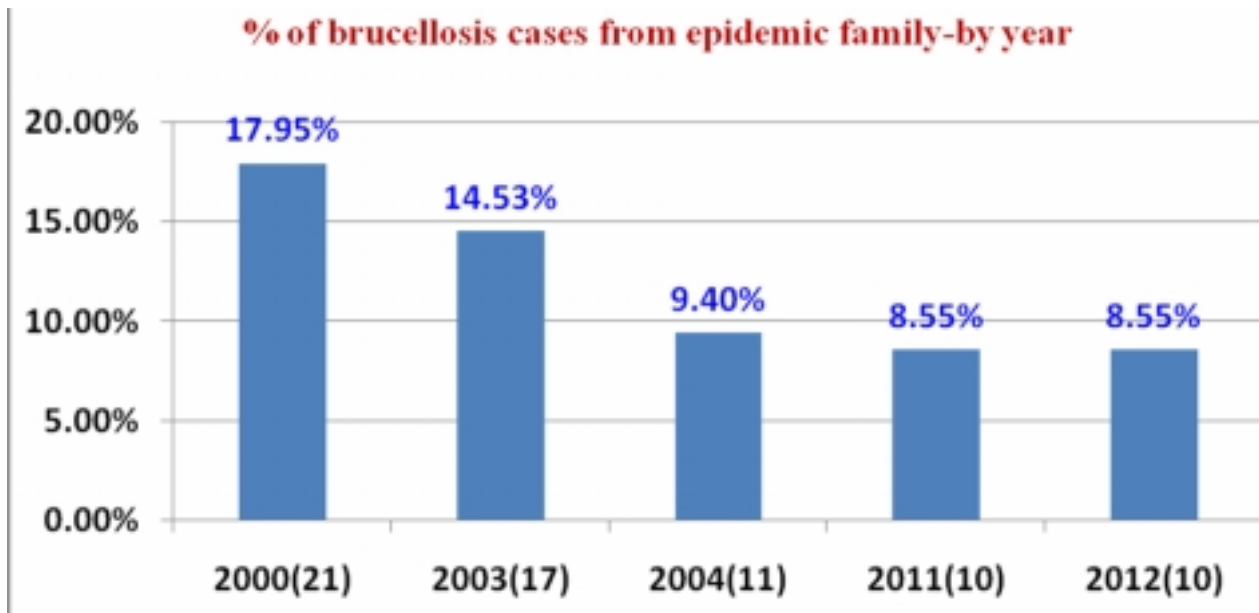


Figura 4. Brucellosis was registered during all the year, as sporadic cases or epidemic form. % of brucellosis cases in family epidemics in region of Gjilan in years.

Figura 5

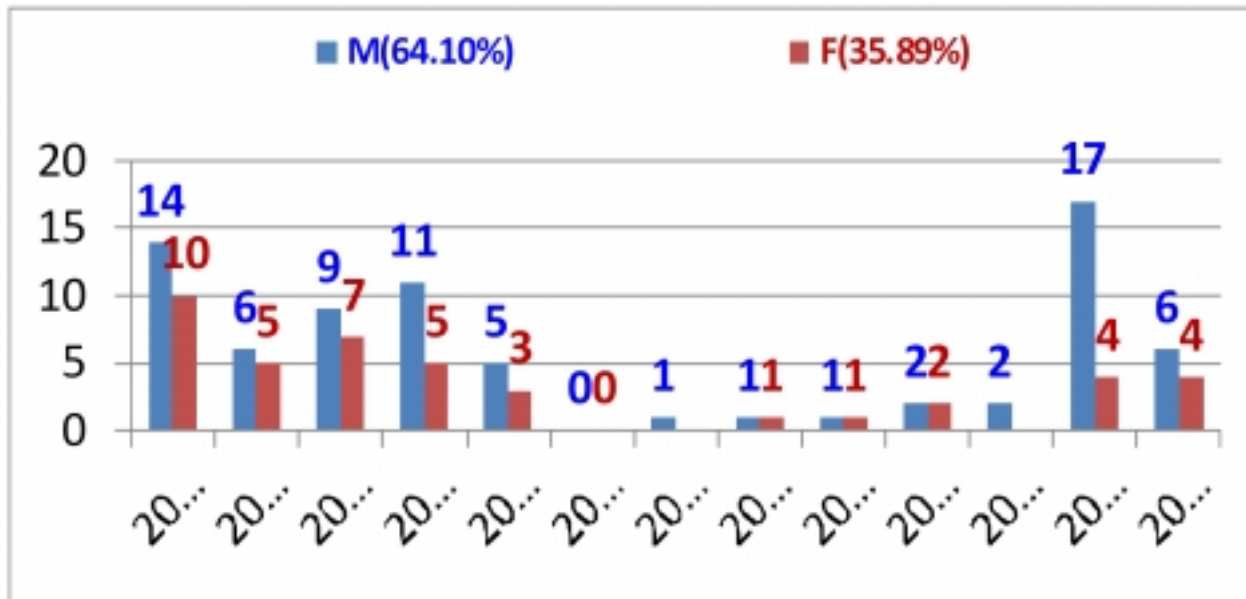
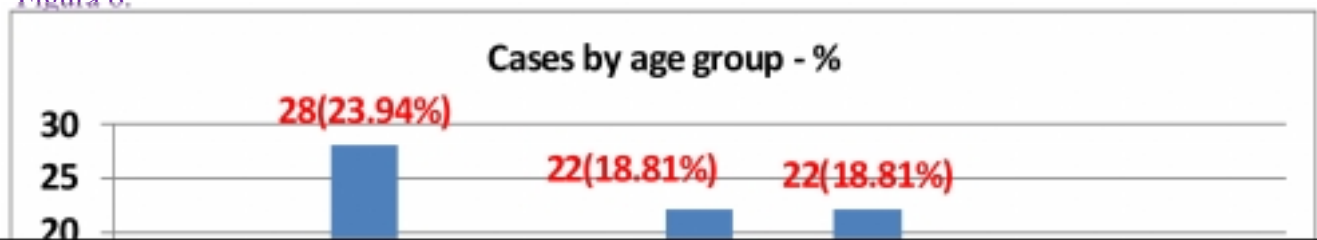


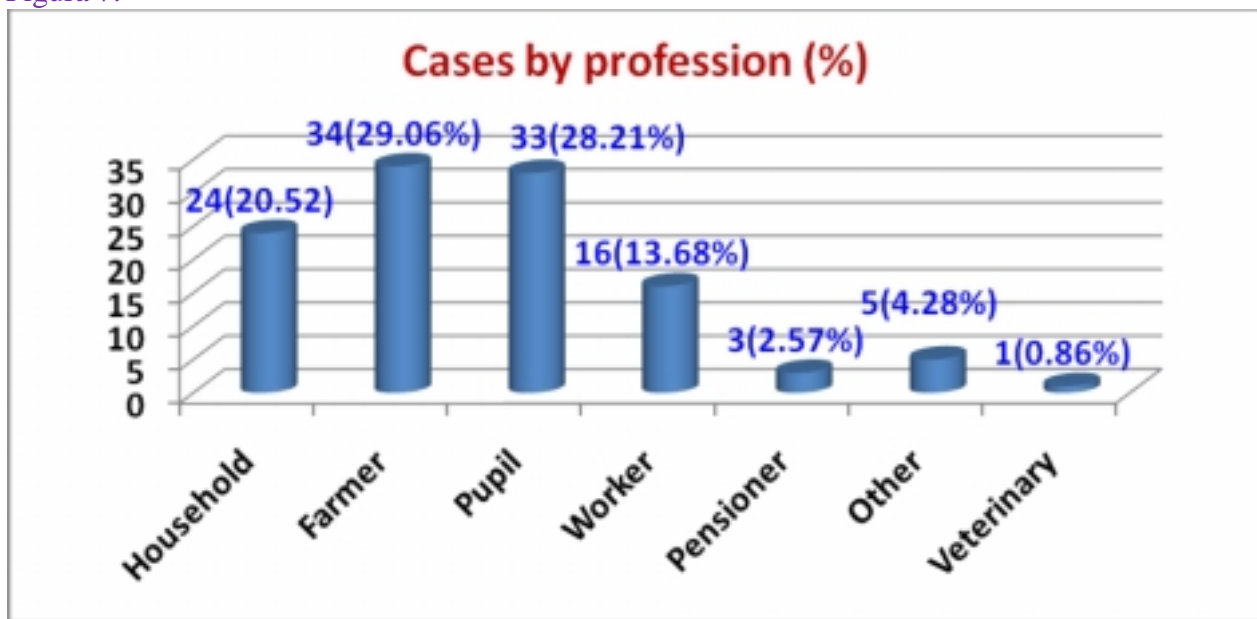
Figura 5. Brucellosis disease, in our region affect both sexes. The males were significantly dominant M=62cases(64.11%) and F=42cases(35.89%).

Figura 6.



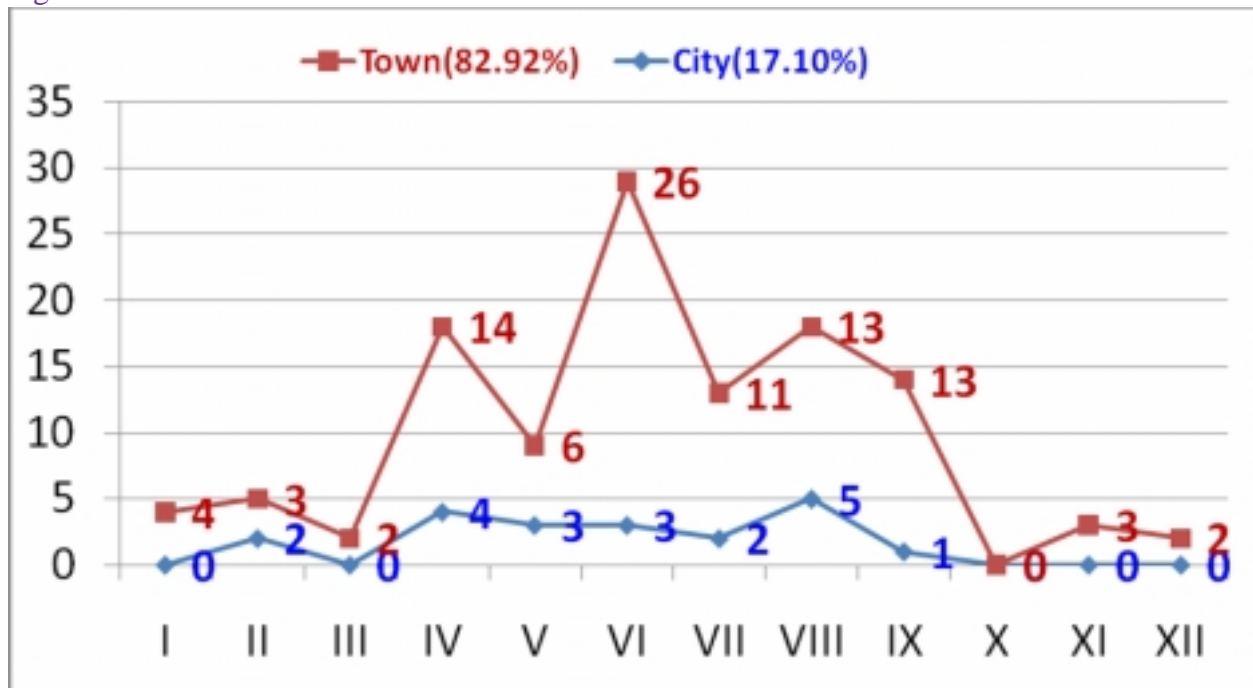
[Figura 6.](#) Most of patients were in age group 10-19 years(23.94%),30-39years and 40-49 years (18.81%) and 50-59years (11.12%).

[Figura 7.](#)



[Figura 7.](#) Brucellosis is considered to be an occupational disease for people who work in the livestock sector. So even in our region, attack the people who are in contact with animals and working with them, such as housewives, farmers, children, pastors, etc..

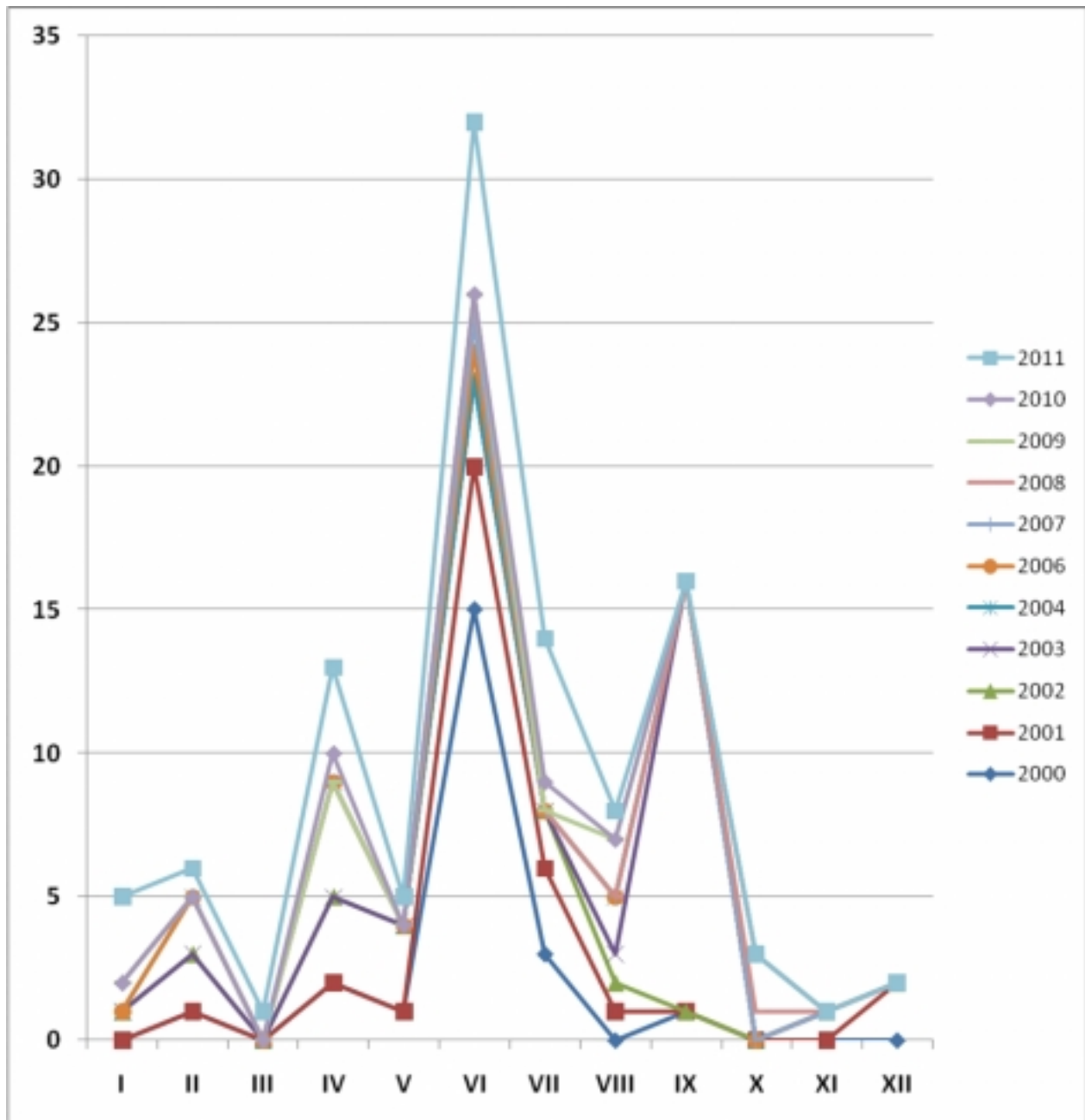
Figura 8.



The monthly distribution of cases in the 12-year period (2000-2012) is presented in [Figure 8](#). The great majority, 111 (94.8%) of patients were from 3 municipalities of Gjilan region: Gjilan, Kamenica and Vitia. The majority of patients (82.92%) were inhabitants of rural regions.

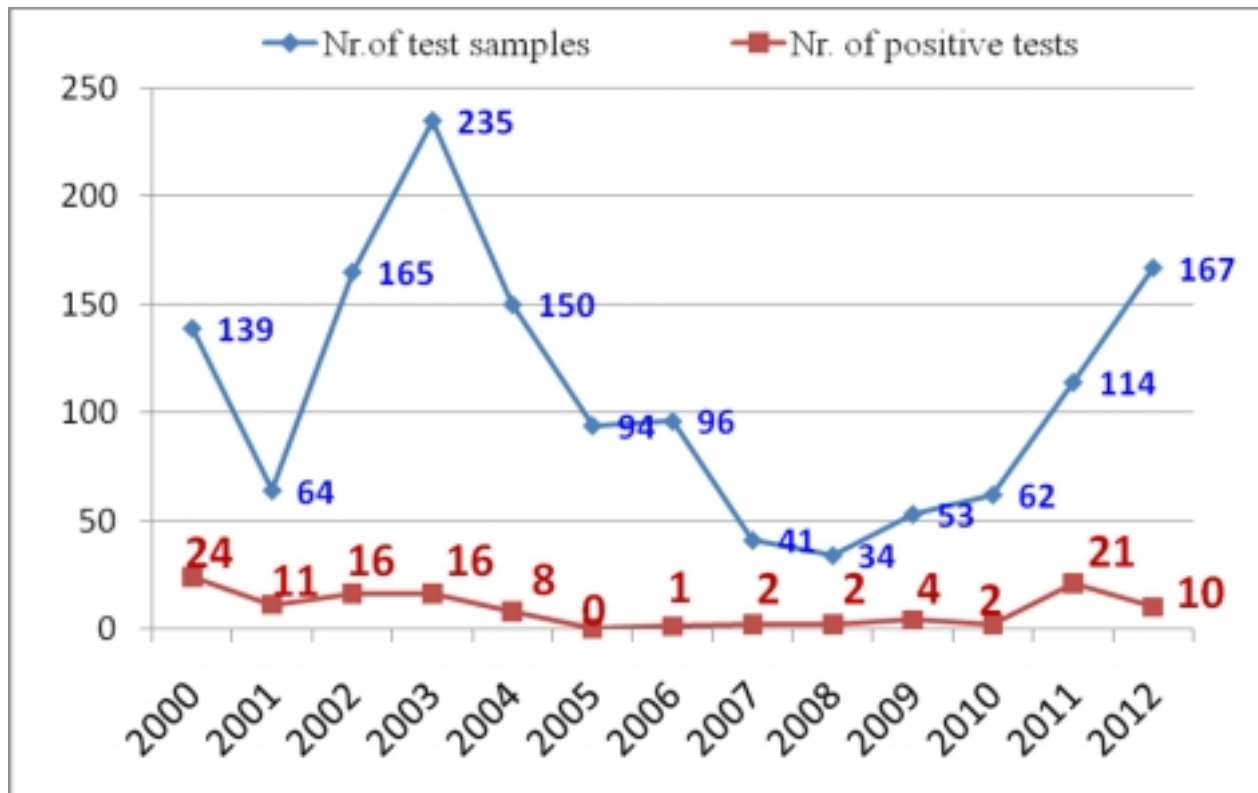
Figura 9.





[Figura 9.](#) In Gjilan region, human brucellosis is more frequent in the summer months. The number of human brucellosis cases increased from January through March when it reached the first, smaller peak. Then it continued to increase from May through September, reaching its second peak. In Gjilan region, brucellosis infections changed with the seasons, increasing when contacts between people and animals intensified (March and October). It is a time of births and abortions in sheep, goats, and other domestic animals.

Figura 10.



[Figura 10.](#) The diagnosis was made only on the basis of serological tests (Rose-Bengal plate agglutination, Wright test) in 1414 patients. During 2000-2012, in Gjilan region were registered 117 positive cases of brucellosis or 9.18% from 1414 test cases.

## Conclusion

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We retrospectively analyzed 117 patients with brucellosis hospitalized at the Regional hospital in Gjilan, in department of Infectious Diseases in the period from 2000 to 2012.

Region of Gjilan is located in the southeastern part of Republic of Kosovo which gravitates 260.000 inhabitants in 4 otherwise: Gjilan, Kamenica, Viti and NovoBerde. Gjilan region has an area of 525 square kilometers and consists of 63 villages, has good geographical position, landscape and climate factors that create opportunities for the development of a rich flora and fauna. With an area about 650 km square, with a length of about 40 km and width of about 16 km, with high-end and sides 500 m to 1000 m high. In Gjilan region reigns climate, because there is a relative height of 410 m above sea level.

Brucellosis was widely but unevenly distributed throughout the Kosovo. *Brucella melitensis* probably predominates as the cause of brucellosis in ruminants in the province of Kosovo.

In 1980, brucellosis was imported to Kosovo from Macedonia due to several favorable factors: overlapping common pastures on the Šar mountain (in the municipalities of Prizren, Dragaš, and Vitina in Kosovo) and in the municipality of Negotino (Republic of Macedonia), a semi-nomadic lifestyle of raising small ruminants and cattle, and making cheese from uncooked milk. The reason for the increase in incidence in 1991 was the military conflict in the former Yugoslavia, which led to population and animal migration and uncontrolled trade of food.

Brucellosis has been a significant public health concern in Kosovo and in Gjilan region. This problem may be solved by joint efforts of all relevant factors, first of all human and veterinary medical services.

Epidemiological is significantly to human brucellosis registered in 3 of the total 4 municipalities in Gjilan region. The increase in brucellosis in Gjilan region, especially in 2000 and 2011 and the epidemiological situation of brucellosis is still heavy, as was immediately after the war. Uncontrolled trade and migration of animals is the main mode of spreading brucellosis.

Main sources of human brucellosis infection in Gjilan region were occupational exposure and ingestion of contaminated food products. The groups in which the occupational risk of infection is greatest include those whose work brings them in direct contact with infected animals or their products. These include farmers, shepherds, and their family members who help with the animals. Food-borne transmission is usually the main source of brucellosis in urban populations. Ingestion of fresh milk or dairy products prepared from unheated milk is the main source of infection for most populations.

And in the end, based on the presented data, we conclude that Gjilan region is endemic brucellosis zone in Kosovo. Brucellosis in Kosovo is still an important health and social problem.

## Recommendations

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Brucellosis has been a significant public health concern in Gjilan region. This problem may be solved by joint efforts of all relevant factors, first of all human and veterinary medical services.

Uncontrolled trade and migration of animals is the main mode of spreading brucellosis.

This suggests that controlling the animal trade is the main mode of control and prevention of brucellosis spread. Animals should be individually identified by brand, tattoo, or ear tag. Unauthorized sale or movement of animals from an infected area to other areas should be forbidden. Similarly, importations into clean areas must be restricted to animals that originate from brucellosis-free areas, that have no herd history of the disease, and that have obtained negative results in recently performed diagnostic tests.

During investigations of outbreaks, serological testing of animals connected to human brucellosis cases was performed by competent veterinary institutes in the regions under study. In our study, we focused on the epidemiological situation and we did not analyze the epizootiological situation.

The most rational approach for preventing human brucellosis is the control and elimination of the infection in animals. Pasteurization of milk is another protective mechanism.

Vaccination of cattle is recommended for control of goat and sheep brucellosis in enzootic areas with high prevalence rates. Eradication by testing and culling is the way to the elimination of brucellosis in regions with a low prevalence.

Health education of the rural population, especially by health personnel has special importance in the prevention and elimination of brucellosis in our region.

## References

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