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Prevalence of Brucellosis in Butcher Population of District Swabi Khyber Pakhtunkhwa Pakistan

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Abstract

Brucellosis, caused by bacteria of the genus *Brucella*, is an important zoonotic infection that causes reproductive disease in domestic animals and chronic debilitating disease in humans. An intriguing aspect of *Brucella* infection is the ability of these bacteria to evade the host immune response, leading to pathogen persistence. In humans, the disease may cause many symptoms varying from mild flu-like to severe complications on the part of the nervous system, musculoskeletal system and the heart. *Brucella*e comprise facultative intracellular bacteria that infect a variety of feral and domestic animals. In current study 73 samples were screened for *Bru*cellosis. The male was 69 (95%) and the female were 4(5%). Brucellosis were 8 (11.0%) positive for Brucella Abortus, and 3 (4%) were positive for

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Brucella Melitensis and 62 (85%) people were negative.Results were analyzed through SPSS. To aware the society and control the disease more studies will be required.

Keywords: Brucellosis,Brucella Abortus, BrucellaMelitensis

INTRODUCTION

*Bru*cellosis is a chronic bacterial disease cuase from gram negative coccobacilli (Short Rods) non-sporing Bacteria having lack of flagella so therefore they are non-motile Bacteria known as *Brucella* which affect various species of domestic and wild animals, as well as humans. In humans, this disease is also called: Maltese fever, Bang's disease,or Mediterranean fever. In humans, the disease may cause many symptoms varying from mild flu-like to severe complications on the part of the nervous system, musculoskeletal system and the heart.(Galinska and Zagórski 2013)*Brucella*e comprise facultative intracellular bacteria that infect a variety of feral and domestic animals. The discovery of novel *Brucella*e in recent years has considerably expanded the genus, which currently comprises 12 recognized species, of which four—namely, B. *Melitensis*, B. *Abortus*, B. *suis*, and B. *canis*—are the main causes of the disease in humans. *BrucellaMelitensis* is the most virulent species in humans, whereas no cases of infection caused by B. ovis, B. neotomae, B. microti, or B. papionis have been reported so far.(Yagupsky, Morata et al. 2019).

*Bru*cellosis is the world's most widespread zoonosis, but ranks as one of the seven most neglected diseases, according to the World Health Organization (WHO) There are approximately 500,000-reported incident cases of human *Bru*cellosis annually; however, true incidence is estimated at 500,000 to 10,00,000 cases annually. Consistent case-reports of animal and human *Bru*cellosis originate from all continents with exception of Antarctica, in which only animals have tested positive.(Hull and Schumaker 2018)*Bru*cellosis is a bacterial disease associated with evolution of agricultural society, where animal husbandry is an integral part, with worldwide distribution.

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varying from mild flu-like to severe complications on the part of the nervous system, musculoskeletal system and the heart. It is considered as one of the most prevalent zoonosis by Food. (Khurana, Sehrawat et al. 2021).

*Bru*cellosis is primarily a zoonotic infection, humans acquire the disease from direct contact with an infected animal for recreational or occupational exposure, or consumption of its products. Human-to-human transmission is very rare but has been documented after blood transfusion, bone marrow transplantation and sexual contact. Neonatal infection can be acquired transplacentally or during delivery, and postnatally by breast milk. *Bru*cellosis exists worldwide and it is still a major public health problem, endemic areas are the Middle East, the Mediterranean, India and South America, in such locations the consumption of unpasteurized milk or its products is the main way of transmission (Yagupsky, Morata et al. 2019).

METHODOLOGY

Study Place

The current study was conducted in the butcher population of district Swabi Khyber PakhtunKhwa

Study Duration

Sample were collected from butcher and those people who keeps animals in home during the peroid of July 2024 to October 2024.

Sample Size

In this time period of two months *73*different samples were collected from Butcher and those who keeps animals.

Selection Criteria

Inclusion Criteria

Especially Butcher and all the people who help in their home are included in this study.

Exclusion criteria

All those people are excluded from this study who are not butcher or those who not keeps animals in their homes.

Identification of *Brucella* (*Bru*= *Abortus*, *Bru*= *Melitensis*)

The *Bru*cellosis infection was identified by the qualitative determination on slide method. We analyzed *Brucella* prevalence separately for males and females. An analysis was

performed adults (from 20 to 60 years). To analyse any time-trend of *Brucella* prevalence, the study period from July 2024 to October 2024 (Four-month duration). Furthermore, the metaanalysis was conducted based on different diagnostic methods wherever the data were available. When a study presented *Brucella* prevalence for Swabi regions, periods or diagnostic methods, we considered each report separately for analysis. The following information was extracted from each study regarding *Brucella* prevalence; first author, region of study, study population, study date, diagnostic method, sample age, sample size and prevalence rate. Detection of *Brucella* could be assessed by any of the following methods: serology (anti-*Brucella* IgG, IgM antibody), ELISA test, Bone Marrow Examination, bacterial culture. We were select a serology antibodies detection method (Slide Method).

Collection of blood specimens should be carried out by trained phlebotomists to avoid causing study participant discomfort or compromising the quality or quantity of the sample. The study participants should receive clear oral and/or written instructions, with information, for example, about fasting and avoidance of medications as necessary for the planned analyses. For blood collection, standard protocols recommended by well-established organizations must be used. Blood collection tubes should be drawn in a specific order to avoid cross-contamination of additives. An important early decision in blood collection is whether to collect anticoagulated blood (consisting of plasma, buffy coat, and RBCs) or coagulated blood (consisting of serum and RBC clot. There are several types of anticoagulants, which differ in their mechanism of action and which need to be chosen carefully to avoid problems with certain laboratory applications. Special collection tubes with protease inhibitors have been developed, which preserve proteins for proteomics analyses. The analysis of trace metals in blood also requires caution, as trace metals may be present in the evacuated collection tubes.

RESULTS

Result of Brucellosis

In this study we were screened 73 peoples for Brucellosis where 8 (11.0%) were positive for Brucella Abortus, and 3 (4%) were positive for Brucella Melitensis and 62 (85%) people were negative.

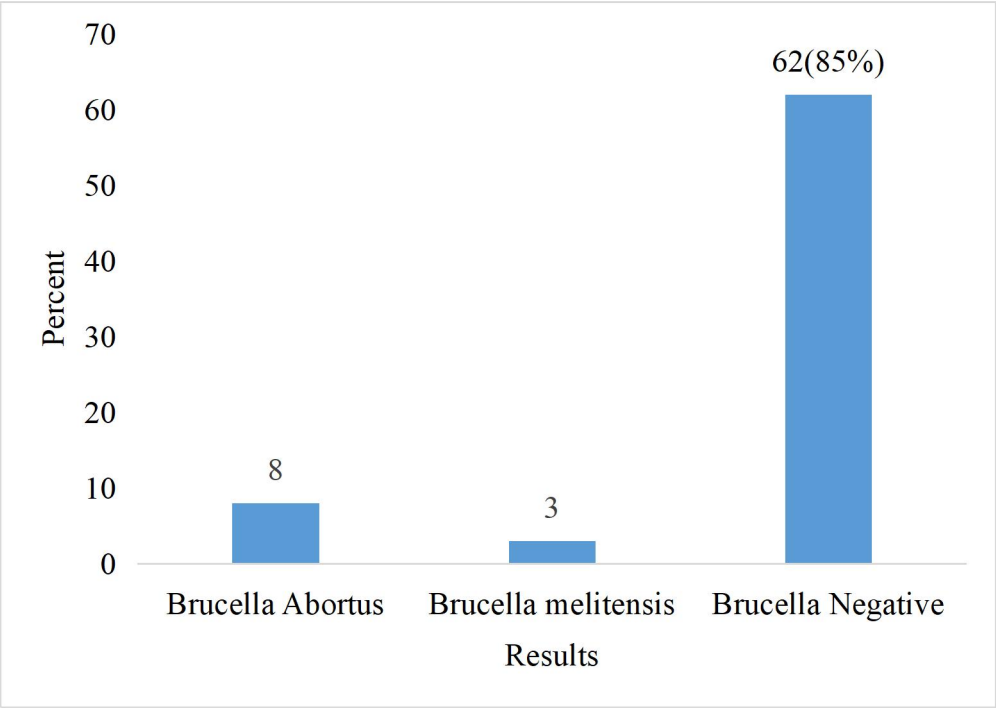

Fig. Distribution of Brucellosisresult

Age wise Distribution of *Brucellosis* Results

In this study we were screened 73 people for brucellosis of different age group. Four individual have positive results of *Brucella Abortus* andthree individual have positive results of *Brucella Melitensis* in 20-30 years age group. While2 individual have positive results of*Brucella abortus*and 0 of *Brucella Melitensis*in age group of 31-40 years.In age group of 41-50 there is two people have positive results of *brucella abortus*and 0 of *Brucella Melitensis.*

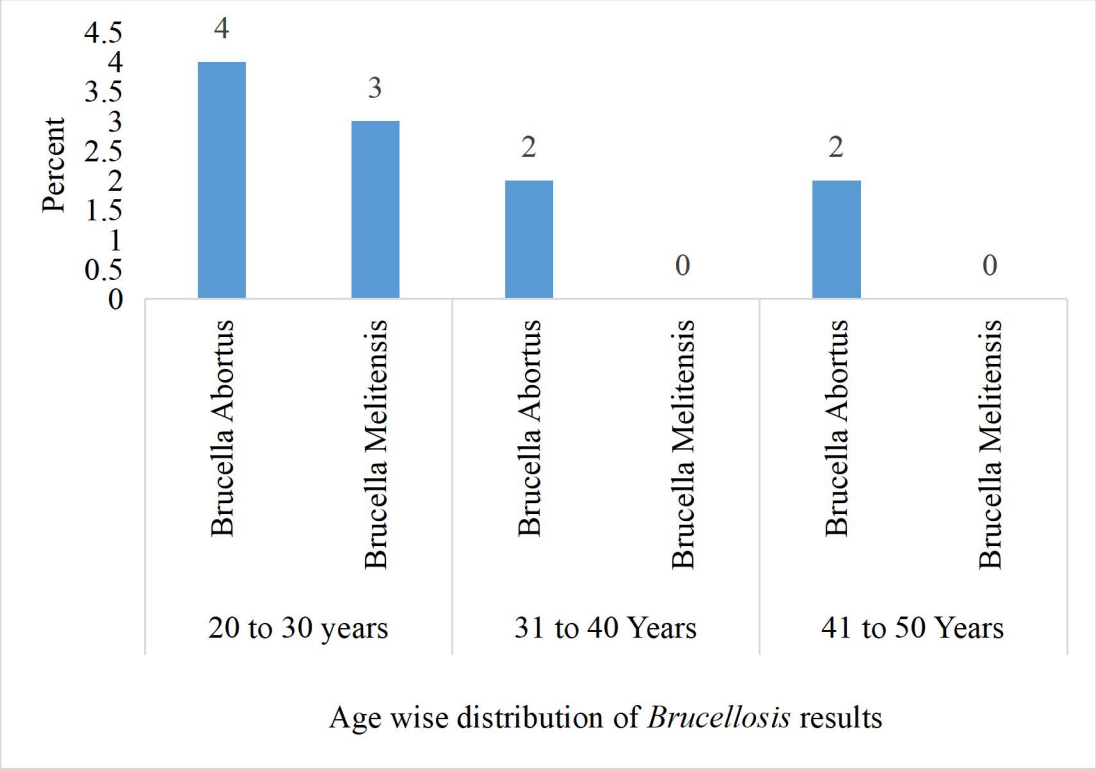

Fig. Age wise distribution of Brucellosis results

4.4 Gender wise distribution of *Brucellosis* Results

People were investigated in this study where 69 males are investigated for Brucellosis where 7 male indivduals have positive *Brucella Abortus* and 3 have *Brucella Melitensis* while 59 men are negative.There are 4 females where 1 female are infected with *Brucella Abortus* and 3 have negative results.

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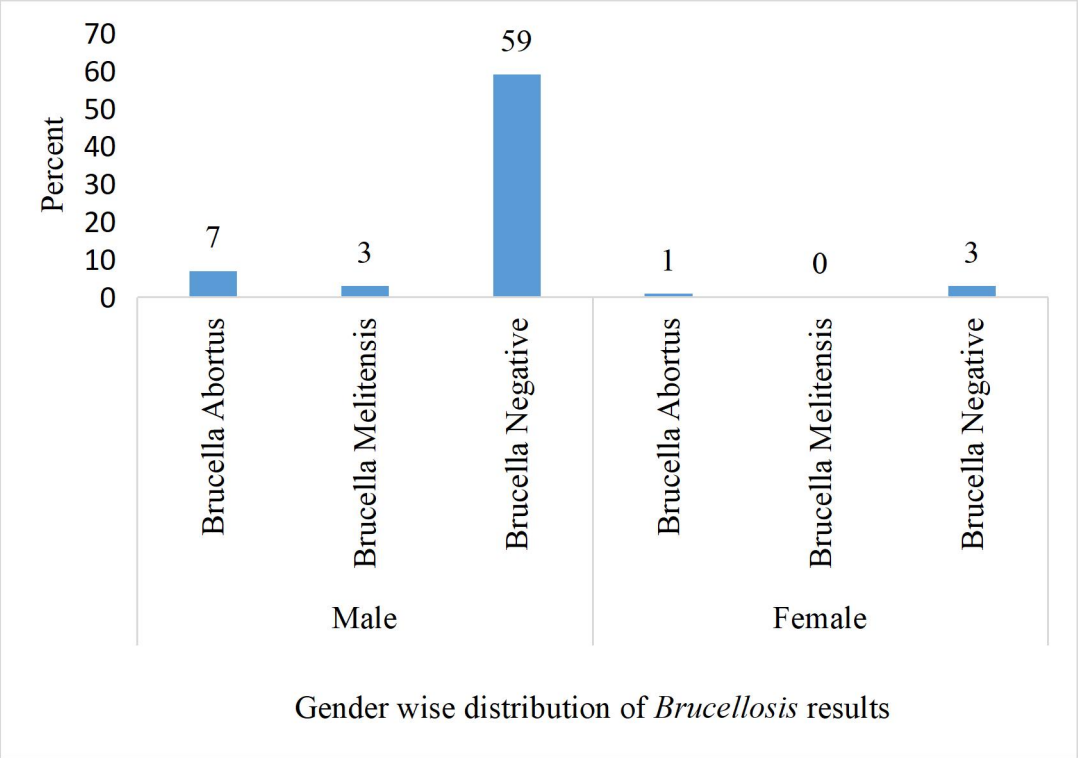

Gender wise distribution of *Brucellosis* results

Determination Of Animals According To Brucellosis Result

In 30 peoples there is 3 peoples who keeps cows have *Brucella Melitensis* and 4 have *Brucella Abortus* while 23 have free of *Brucellosis*. In 21 people who keeps buffalo have one *Brucella Abortus* case, while 20 peoples have negative result. In another 18 peoples who keeps Goats have three positive cases of *Brucella Abortus*, while 4 peoples who keepssheeps have not any positive case of

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Brucella.

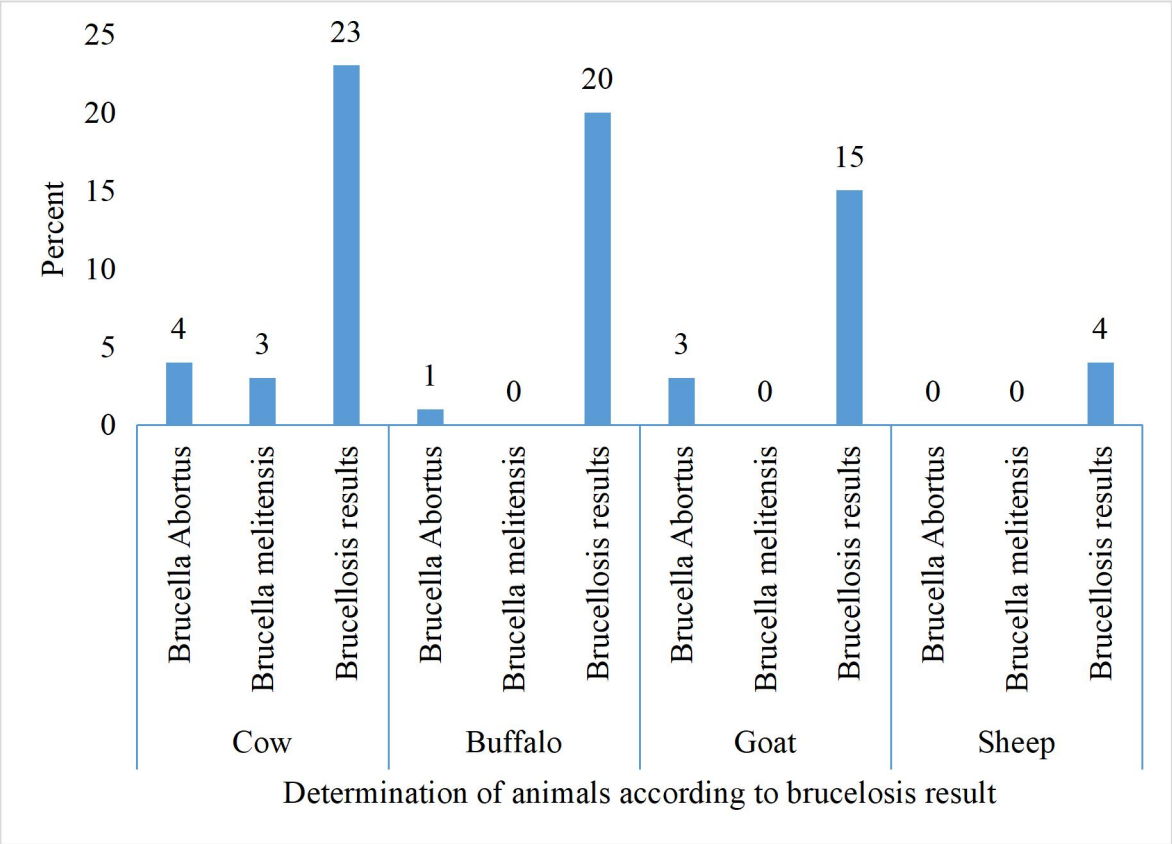

Fig. Determination of animals according to brucellosis result

DISCUSSION

Brucellosis is considered (Njeru, Wareth et al. 2016) endemic in most Middle Eastern countries where it is assumed to impose a considerable burden in terms of human disease and impaired livestock productivity. Our work aimed to systematically review available data regarding *Brucella* spp. presence and frequency estimates in humans and ruminants and associations between potential risk factors and human seropositive status in the Middle East. Although the primary search revealed 451 studies, after assessing their relevance, only 87 articles met the primary inclusion criteria and 49 of these provided evidence relevant for this review. Using strict quality criteria, only 11studies were deemed of sufficient quality to provide reliable seroprevalence estimates that could eventually be used to quantify the burden of brucellosis in the region or data to

inform disease prevention programmes prioritizing populations based on specific risk factors.

In our research study we are trying to find the brucellosis infection in district swabi so there we had find that a small ratio of male and female who were suffering from the brucellosis but they are unaware of that infection. But most of the people who keeps animals in their home were follows Protocol and Standard Operating Procedure (SOPs).*Bru*cellosis is recognized as the world's most common laboratory-acquired infection. In current study 73 samples were screened for *Bru*cellosis. The male was 69 (95%) and the female were 4(5%). Brucellosis were 8 (11.0%) positive for Brucella Abortus, and 3 (4%) were positive for Brucella Melitensis and 62 (85%) people were negative. Results were analyzed through SPSS. To aware the society and control the disease more studies.

CONCLUSION

Brucellosis is still considered as an important infectious disease with a high prevalence in many countries. It is necessary to implement a national brucellosis control program by increasing medical education, public knowledge and various controlling plans for preventing, controlling and eradicating of brucellosis. Brucellosis are associated with contamination so follows the protocol while handling the waste material of animals. (Dunk Cake) When someone drink the milk, which is unpasteurized, there will be the chance of brucellosis because the brucella bacteria present there which is not kill without boiling the milk. It is also found in the meat which is not cooked at the required temperature.

RECOMMENDATION

1. To reduce the cases of brucellosis some of the following Standard Operating Procedure (SOPs) must be followed.
2. While drinking the milk you must have to boil the milk because the brucella bacteria present in the milk will be kill by boiling, so you have lesser chance of the infections.
3. Those women who have deals with the feces of animal must followed the steps while handling the waste of animals, i.e women must use thick gloves and after the procedure they must wash their hands on daily basis and also clean the nail and use sanitizer to kill the micribes.

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