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Risk analysis of brucellosis in country level Libya**Ibrahim Alsadi^{1*}, Abdalla G Zafir¹, Mohammed M Alati¹, Randa Hamad¹, Abdusalam Saleh¹, Mahmoud F Gaballa² and Reem M El-Seifat³**¹Department of Preventive Medicine, Faculty of Veterinary Medicine, Omar AL Mukhtar University, AL Beida²Department of microbiology, Faculty of science, Omar AL Mukhtar University, AL Beida³Faculty of natural resource & environmental science, Omar AL Mukhtar University, AL Beida***Corresponding Author:** Ibrahim Alsadi, Department of Preventive Medicine, Faculty of Veterinary Medicine, Omar AL Mukhtar University, AL Beida**Received Date:** May 08, 2023 / **Accepted Date:** May 20, 2023 / **Published Date:** May 25, 2023**Abstract**

The purpose of this study is to determine the likelihood that "Brucellosis," the disease's source, may infiltrate Libya and force the importation of protective animals before the disease is eradicated. Most nations import and export domestic animals for human consumption, either as meat or dairy products. Furthermore, Libya is covered up by importing domestic animals for use as food and for the production of dairy goods. Authorities that are worried have noted instances of negligently introducing animals in the meantime. Disregarding epidemiology, risk assessment, and hazard identification can have serious repercussions, hence it is important to take it into account while using domestic animals among people. However, such livestock's poor health risks can be seen while they are being bred for import. To combat, it is vital to follow adequate health inspection procedures and keep records using cutting-edge epidemiology techniques. Otherwise, imported livestock with "brucellosis" is brought in. If just one animal with "brucellosis" is imported, it can spread quickly throughout the region, making it difficult to eliminate. In general, these factors lead diseases to spread rapidly across the nation. This research has followed the approach of Qualitative Risk Analysis. A qualitative risk analysis methodology was used in this study.

Keywords: Brucellosis; Epidemiology; Livestock's; Risk Analysis**Cite this article as:** Ibrahim Alsadi, Abdalla G Zafir, Mohammed M Alati, et al. 2023. Risk analysis of brucellosis in country level Libya. J Veterina Sci Res. 5: 01-05.**Copyright:** This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. Copyright © 2023; Ibrahim Alsadi**Introduction**

One of the most widespread zoonotic illnesses in many nations around the world is brucellosis. In reality, brucellosis has a significant negative economic impact on cattle output, which may have an impact on regional and global trade in underdeveloped nations. Humans who are

infected with brucellosis have undulant fever or Malta fever.

Identification of the hazard

The first case of brucellosis was identified in cattle in the 19th century, and symptoms included dam mortality, sterility, calf loss of

35–100%, and a 25% decrease in milk production (Mahmoud 2009). Brucellosis is characterized by high morbidity rates and quick dissemination (OIE 2018). A bacterial zoonotic disease called *Brucella* is also known as "undulant fever" "Mediterranean fever," or "Malta fever" (M.J. Corbel, 2006).

Epidemiology

Even though some wealthy countries have virtually completely eliminated or are on the verge of eliminating brucellosis, the disease remains a major concern for human and animal health in many other regions of the world, particularly in those where livestock is a significant source of food and revenue. The zoonotic disease brucellosis affects people, domesticated animals, and several kinds of feral (wild) animals. In the reservoir species, brucellosis can result in abortion, which might delay or result in irreversible sterility. There are numerous routes for *Brucella* to spread between humans and animals (OIE 2018). After abortion, parturition, and the production of colostrum and milk by infected animals, organisms are released into the uterine discharges (A. Robinson, 2003).

In damp, cool environments, the bacteria can persist for several months. The bacterium can persist for a while in dairy products, ice cream, meat (especially frozen meat), and other animal products (OIE 2009). The Middle East, Asia, Africa, South and Central America, the Mediterranean Basin, and the Caribbean are particularly affected by brucellosis. Different *Brucella* species have different geographical distributions. In areas where cattle are raised, *B. abortus* is common, with the exception of Japan, Canada, some European nations, Australia, New Zealand, and Israel, where it is controlled (OIE 2018). Environment-borne contamination, occupational exposure typically brought on by close contact with infected animals, and food-borne transmission are all possible sources of infection (M. J. Corbel, 2006). Brucellosis is not often spread from person to person in humans. Rarely documented transmission routes include bone

marrow transplantation, blood transfusion, sexual contact, and congenital illnesses. Additionally, the placenta, ingesting breast milk, or swallowing secretions while an obstetrician can all cause infection in a newborn (OIE 2018).

Risk Analysis

An evaluation of the risks determines the likelihood that the plague of dangerous diseases will spread endemically to an importing nation. Although, the consequences have an impact on the economic, biological, and environmental situations. Research is necessary in all seriousness since imported animal production may operate as a disease's vector.

Release (Entry) Evaluation

Since their livestock production is insufficient when compared to their consumption and production, the majority of developing nations rely on imported livestock production. Live animals or frozen meat can spread brucellosis to the nations that import cattle. This is made possible by false negative testing or lax quarantine regulations, especially in importer nations. Furthermore, as developing nations import semen from developed nations to increase their livestock production, semen is one of the main elements that import brucellosis in importer countries. As a result, any flaw or carelessness in the testing or quarantine process increases the risk of spreading the illness and the chance of an outbreak. In the rural areas of Libya, people frequently consume their products without properly boiling them. They don't have enough knowledge about the risks of infections, and they move their animals and animal products from one place to another without having them inspected or certified for health. According to the epidemiology of brucellosis and the previously described hazard identification, the illness can readily be introduced and spread into susceptible animal, livestock, and human populations even during an outbreak (OIE, 2021).

Assessment of Exposure

Before importing animals or livestock production, careless nations must take the appropriate precautions for both human and animal health. It can foretell the importation of brucellosis from endemic nations through animal production. By coming into direct touch with sick animals or wildlife as well as contaminated products, the virus can accidentally be transmitted to humans (Mukhtar, 2010). Additionally, artificial insemination is a crucial method for quickly spreading the infection among animals (OIE, 2018).

Consequences Evaluation

The effects of a brucellosis outbreak can be felt on many different levels, including:

- i. It disrupts trade ties for the exporting nation and has a detrimental effect on livestock productivity and development in general.
- ii. The disease's consequences on both animal and human health have the potential to have a considerable influence.
- iii. If the disease spreads to wildlife, it will become a significant issue because it cannot be managed.
- iv. According to the OIE (2018), the illness causes sterility, stillbirths, miscarriages, and decreased milk production in animals.
- v. Expense of control and preventative measures.
- vi. The tourism section suffers losses.
- vii. The disease may spread and eventually become endemic.
- viii. Emergency vaccination losses.
- ix. Cost impact.
- x. Compensation costs for the impacted parties.

All of these effects result in significant economic losses that might primarily affect importing nations as well as nations that depend on the export of animal production.

Estimation of Risk

Assessments of entry, exposure, and consequence are necessary to determine the risk that the brucella Spp poses. As previously indicated, the evidence suggests that brucella organisms are not trivial, making this disease a possible concern to both animal and human health in importing nations. As a result, risk management strategies must be used to lower the degree of risk to an acceptable level.

Management of Risk

The following steps must be taken by the veterinary authorities in order to adopt stringent procedures and lower the probability of disease occurrence:

- i. Discourage both the transfer of animals and animal production without veterinary supervision as well as the importation of livestock production from endemic or enzootic areas..
- ii. For imported animals and cattle products, implement tight quarantine measures
- iii. Before passing those for human use, adding them to the herd, or slaughtering positive instances, test imported animals, semen, and livestock products (Mukhtar 2010).
- iv. Brucellosis-free nations should be used to import animals, and vaccination campaigns should be carried out on diseased animals before integrating them into the herd (Mukhtar2010).
- v. For addressing the risk factors of the disease, effective regional and national cooperation between the animal health and public health sectors should be launched on a regular basis (Spickler 2009b).
- vi. Products being imported need an international veterinary certificate.
- vii. Programs for prevention and control must be put in place.

When the danger of the illness is assessed to be high or extremely high, the veterinary authorities of the importer nations must put tight precautions in place to decrease that risk:

- a) Impede the import of cattle from endemic or enzootic regions.

b) Implement a stringent quarantine policy for livestock productions or imported animals.

c) Before releasing them for human consumption or adding them to the herd, test imported animals, livestock, or semen. Slaughtering is also done in response to positive cases (Mukhtar, 2010).

d) Animals should only be brought in from nations free of Brucellosis.

e) A vaccination campaign may be implemented prior to the addition of any animals (Mukhtar, 2010). The most effective way to prevent and manage the spread of Brucellosis in livestock is really vaccination. Live and attenuated vaccines offer superior protection against inactivated vaccines (AUSVETPLAN 2021).

f) In order to effectively manage the risk, there must be effective regional and national collaboration between the public and animal health sectors (OIE, February 2009).

g) Products being imported need an international veterinary certificate.

Communication of Risk

Information about the disease's dangers and suggested measures to eliminate or lessen those risks is shared between the exporting and importing nations during this procedure. An open, transparent, and interactive discussion of the various points of view has been going on. Assessors and individuals in charge of managing risks in importing and exporting nations can carry out the consulting procedure.

Conclusion

Every step in the importation process for animals or their products has some risk and raises the probability of spreading one or more diseases to the importing nation. The initial goal of the risk analysis procedure is to give importing nations an unbiased, rational technique to evaluate the risk of diseases linked to the importation of animals and animal products. An expert in epidemiology must be present during the risk analysis process to provide descriptions of the disease and its

symptoms. Making the proper choice is possible based on the outcomes of risk analysis. According to this study, brucellosis poses a significant danger for importers; as a result, precautionary measures (risk management) should be done to lower that risk, especially in the importing nation.

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