Research Application Summary

Assessment of milk producers' awareness of milk-borne zoonoses, prevalence and risk factors of brucellosis in selected smallholder and commercial dairy farms of Zimbabwe

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Abstract

The study assessed milk producers' awareness of milk-borne zoonoses and prevalence and risk factors of brucellosis in selected smallholder and commercial dairy farms of Zimbabwe. A total of 119 dairy producers were interviewed; 21 (17.6%) commercial dairy and 98 (82.4%) smallholder dairy farmers. Most respondents were males (74.8%) and the majority (71.4%) of the respondents had undergone formal education. Milk producers awareness of milk-borne zoonoses was low; only 41.5% were aware with a significantly ($P<0.05$) higher percentage of commercial dairy farmers (65.0%) being aware compared to smallholder dairy farmers (36.7%). The prevalence of antibodies to *Brucella* spp. in raw milk was low. Logistic regression model identified dairy sectors (OR 3.1; $P<0.04$) and vaccination status (OR 0.4; $P<0.04$) to be independently associated with herd abortions status. Training milk producers on milk-borne zoonoses, dairy hygiene and milk quality would help to improve milking quality and reduce transmission of zoonoses to public.

Key words: brucellosis, *Brucella* spp., Zimbabwe, zoonoses

Résumé

L'étude a évalué la conscience des producteurs du lait sur les maladies transmissibles à partir du lait et la prédominance ainsi que les facteurs de risque des maladies infectieuses dans les exploitations laitières commerciales sélectionnées et celles de petits fermiers du Zimbabwe. Un total de 119 propriétaires de laiterie ont été interviewés ; 21 (17.6%) fermiers des laiteries commerciales et 98 (82.4%) fermiers de petites laiteries. La plupart des répondants étaient des hommes (74.8%) et la majorité (71.4%) des répondants avait fait l'enseignement conventionnel. La conscience de producteurs de lait sur ces maladies transmissibles par le lait était basse ; seulement 41.5% étaient conscients avec un pourcentage significativement ($P<0.05$) plus élevé des fermiers de laiterie commerciale

(65.0%) plus conscients que les fermiers de petite laiterie (36.7%). La prédominance des anticorps aux espèces *Brucella* en lait non préparé était basse. Le modèle logistique de régression a identifié les secteurs laitiers (OR 3.1 ; P<0.04) et le statut de vaccination (OR 0.4 ; P<0.04) à être associé indépendamment au statut d'avortements de troupeau. La formation des producteurs de lait sur les maladies transmises par le lait, l'hygiène de laiterie et la qualité du lait aiderait à améliorer la qualité d'extraction du lait et à réduire la transmission de ces maladies au public.

Mots clés: Maladie infectieuse d'origine animale, espèces de *Brucella*, Zimbabwe, maladies transmissibles d'origine laitière

Background

Dairy farming in Zimbabwe consists of two sectors, the commercial and small-scale that vary with scale of production (Ngongoni *et al*., 2006). Diseases that are naturally transmissible from vertebrate animals to humans and vice-versa are classified as zoonoses. In the dairy sector, zoonotic pathogens are normally present in dairy animals, raw milk and the farm environment but are difficult to diagnose. Most milk-borne zoonoses are mostly acquired through consumption of infected milk. They are of both public health and economic importance causing serious economic losses in dairy cattle production; they pose a major barrier for trade of animals and animal products and this could seriously impair socio-economic progress in developing countries. Brucellosis is one of the most important zoonoses that affect human welfare and livestock health worldwide. It is caused by various species of the genus *Brucella*. Currently there is no documentation of studies done on milk producer's awareness of milk-borne zoonoses in Zimbabwe. Lack of awareness by milk producers of milk-borne zoonoses can put the lives of the public at risk. The introduction of land reform program in the Zimbabwe brought about increased movement of cattle between commercial and smallholder dairy farms of which some were not monitored and could have brought the spread of livestock diseases; especially infectious diseases that includes brucellosis.

Literature Summary

Milk has a wide range of nutritional benefits and supplies a variety of nutrients (Nangamso, 2006). However, since milk is rich in nutrients, it can also serve as a good medium for the growth of many microorganisms, especially bacterial, some of which are pathogenic and zoonotic (Nangamso, 2006). Bacterial pathogens that may contaminate milk are milk-borne zoonoses.

Resource constrained countries, especially those in Sub-Saharan Africa, often lack information on the distribution of zoonotic diseases (Zinsstag *et al*., 2007). Brucellosis ('Undulent fever') is a disease of economic and public health importance in many countries of the world, and it is endemic in some African, Asian and Latin American countries (Matope, 2009).

Study Description

The study was conducted at selected smallholder dairy centers and commercial dairy farms in Zimbabwe between October 2009 and March 2010. A cross-sectional questionnaire-based study was employed to investigate dairy farmers' awareness and knowledge on zoonoses with particular emphasis on milk-borne zoonoses. Milk samples were collected from dairy herds of participating dairy farmers for *Brucella* spp. examination using Milk ring test (MRT). Data generated was analyzed using SPSS 16.0 for Windows. MRT results were analyzed using descriptive statistics and summarized in simple tables. Univariable logistic regression was used to test the significance of the effect of different risk factors on herd level reported abortions. This was done by STATA version SE 10.0 for windows.

Research Application

A total of 119 dairy producers were interviewed. Milk producers' awareness of milk-borne zoonoses was low; only 41.5% were aware with a significantly ($P<0.05$) higher percentage of commercial dairy farmers (65.0%) being aware compared to smallholder dairy farmers (36.7%) (data not shown). The prevalence of antibodies to *Brucella* spp. in raw milk was also low with (2; 2.11%) smallholder dairy herds testing positive while (1; 3.23%) commercial dairy farm testing positive. Logistic regression model identified dairy sectors (OR 3.1; $P<0.04$) and vaccination status (OR 0.4; $P<0.04$) to be independently associated with herd abortions status.

Recommendation

There is need to educate farmers on milk-borne zoonoses, dairy hygiene and milk quality. Also, sampling and examination of the national dairy herds for brucellosis should be conducted regularly.

Acknowledgement

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Reference

Matope, G. 2009. Epizootological studies and diagnostic approaches towards cattle brucellosis in the smallholder dairy sector of Zimbabwe. PhD Thesis, University of Zimbabwe.