



Opinion

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Spread of Infectious Diseases and Socio-Cultural Factors in Developing Countries

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Abstract

This article aims to discuss the social factors associated with brucellosis and African swine fever (ASF) in Sri Lanka and Madagascar, respectively. In 2016, cross-sectional surveys were conducted in both countries. On the basis of the results of these surveys, we describe how brucellosis is more prevalent in certain ethnicities than others in Sri Lanka. Furthermore, in Madagascar, fihavanana, a social norm, encourages farmers to buy ASF-contaminated meat, resulting in ASF spread during outbreaks. It can be concluded that farmers' socio-cultural behavior is one of the main reasons for the spread of animal diseases, and this should be taken into consideration when formulating disease control strategies.

Keywords: Social factor; Brucellosis; African swine fever; Sri Lanka; Madagascar

Introduction

Livestock contributes to the livelihood of 70% of the global poor. Predications of the future demand for livestock products indicate considerable opportunities for livestock producers in the developing countries, particularly through exports. However, one of the main issues regarding livestock production in these areas is low productivity and quality due to livestock diseases. Specifically, most of the neglected zoonoses, such as rabies, anthrax, tuberculosis, and brucellosis, are embedded in developing countries, and most of the trans boundary animal diseases, such as African swine fever (ASF), classical swine fever, and foot and mouth disease, are also endemic there. In addition to resource limitations, the governments of most of developing countries fail to control diseases because farmers in these areas depend on animals economically, socially, and culturally. However, it is still uncommon for social factors to be taken into consideration in disease control strategies.

The purpose of this article is to discuss economically important animal diseases and their association with farmers' socio-cultural factors, which could be taken into consideration in future disease control plans in developing countries, namely, Sri Lanka and Madagascar.

Brucellosis and its association with the social factors of farmers in Sri Lanka

Brucellosis is a bacterial disease that causes abortions in cattle herds and can also be transmitted to humans. In the South Asian island of Sri Lanka, brucellosis has been endemic since 1956 Kumaraswamy [1], and is still regularly reported in most of the dry zone areas of the country DAPH [2]. From May to September 2016, a cross-sectional survey was carried out in three veterinary ranges (Kalmunai, Navathanveli, and Mahaoya) in Ampara district in the dry zone of Sri Lanka¹. The results indicated that brucellosis is prevalent in Ampara district with a rate of 2.7% (95%CI: 1.7–3.7). Disease prevalence was found to vary significantly among the three veterinary areas ($p < 0.001$), namely, Kalmunai (10.9%), Navathanveli (2.2%), and Mahaoya (0.6%), and also among different ethnicities ($p < 0.001$), such as Muslims (27.3%), Tamils (8.1%), and Sinhalese (2.7%), indicating that animal management practices and farmers' socio-cultural behaviors could be contributory factors. The findings suggest that herds kept by Muslim communities are highly vulnerable to contracting bovine brucellosis. This is because these herds predominate in the beef industry Azees [3] resulting high animal

¹The original research finding will be published soon.

transactions for sale, which may contribute to high disease prevalence. Further, low-income-generating farmer groups are also at higher risk. Accordingly, identification of social factors is important in identifying vulnerable communities, which could be prioritized in control programs.

Fihavanana, a social norm that dictates farmers’ behavior

In the African island of Madagascar, ASF has been endemic since 1998. ASF causes a mortality rate of between 30% and 100%, which represents a significant economic impact on farmers’ livelihoods. Introduction of infected pigs to pig populations or via the meat of infected pigs being fed as swill, often causes ASF infection Penrith et al. [4]. Introduction of the meat of ASF-infected pigs is highly probable in Madagascar because farmers illegally sell ASF-infected pig Randrianantoandro et al. [5]. In June 2016, a cross-sectional survey was conducted in the Analamanga and Bongo lava regions of Madagascar to determine whether farmers practice swill feeding and to identify the factors that influence farmers’ behavior in buying ASF-contaminated meat.

Table 1: Pig farmers’ behavior.

	Analamanga (n=116)	Bongolava (n=72)
Use swill feed	67%	51%
Use swill feed and buy ASF contaminated meat	16%	21%

Note: The original research finding will be published soon

Table 1 shows that a high proportion of farmers practice swill feeding. Among those farmers who buy ASF-contaminated meat, 100% of farmers in the Analamanga region mentioned *fihavanana* as the main reason for their behavior. In Bongo lava, 67% of farmers mentioned *fihavanana* and 33% stated that the low price of contaminated meat was a factor influencing their purchasing behavior. *Fihavanana* is a social norm that guides Malagasy people’s behavior, encompassing kinship, friendship,

and mutual support between people. Therefore, social factors are the main driving force that guides farmers to buy ASF-infected meat, which in turn causes the spread of ASF.

Conclusion

It can be stated that Sri Lanka should focus on the vulnerable communities in high-risk areas as a first step in reducing *Brucella* prevalence to sustainable levels; thereby the average prevalence can be reduced to very low level. The island wide control strategy would be cost effective. As swill feeding is practiced mainly on small-scale farms, it might be difficult to remove from pigs’ rations. Therefore, farmers should be discouraged from practicing *fihavanana* during ASF outbreaks. In addition, prohibiting the sale ASF-contaminated pigs would be the most effect measure for ASF control. This could be achieved if the government culled ASF-infected pigs and provided compensation to the farmers.

In conclusion, farmers’ socio-cultural behavior is one of the main reasons for the spread of animal diseases. Therefore, by considering the social factors of farmers, disease control can be attained using a social approach, which would represent an economic approach to animal disease eradication.

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