

**Social network analysis for poultry HPAI transmission**

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**ABSTRACT :** Little is known regarding the types and frequencies of contact that exist between poultry farms and poultry related enterprises in China, which of these may act as transmission pathways for highly pathogenic avian influenza (HPAI) viruses. In this survey study, we explored the linkages that exist among the poultry farms and the poultry related enterprises in two counties (Feixi County in Anhui Province and Beizhen City in Liaoning Province) by using social network analysis. The networks among poultry farms and related poultry enterprises in two counties in China (Feixi County in Anhui Province and Beizhen city in Liaoning Province) were analysed and evaluated focusing on the connectivity of contacts, movements, and potential pathogen transmission. The Feixi County poultry production network exhibited greater connectivity, which incorporated approximately 94% of the farms interviewed in a major component (a set of connected farms not linked with each other), mainly due to linkages of backyard farms through local produce stores and individual agents, whilst the Beizhen City network was more fragmented owing to independent in-house operations (from breed, raise, to slaughter and process) of a few large companies, with multiple smaller components. A range of factors influencing the contacts/movements among farms (act as bridges) were identified in this study. Ability to predict the pathway with the network characteristics on the basis of the factors, such as entity type and geographic location, is useful for developing risk-based approaches for disease prevention, surveillance, early detection, and effective controlling



**Biography** Lu gao has completed her PhD at the age of 27 years from School of public health of Shandong University. Her major is epidemiology and biostatistics. Since 2016 she became a staff of China animal health and epidemiology center, since then her research mainly focus on veterinary epidemiology. In recent years, she has devoted herself to the study of zoonoses and animal diseases, such as Highly pathogenic avian influenza and African swine fever. The analytical reports of Lugao and her colleagues provide scientific basis for policy-making in China.

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