Patterns of contacts in the network of pig movement in the Philippines
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The aim of this study was to describe the traceability system used in the Philippines for slaughtered pigs using social network analysis. The following information were collected prior to finisher pigs arrival for slaughter: 1) date of slaughter; 2) livestock trader name, address and contact details; 3) livestock transporter name, address and contact details; 4) animal source farm details; 5) date of purchase; and 6) number of pigs bought and intended for slaughter. Records of movement events between pig farms, traders, and slaughterhouses allowed us to construct a network of named contacts. The following parameters were calculated for each node of the network: 1) edge weight 2) out-degree; 3) out-degree centralization; and 4) betweenness centrality. The farm to slaughterhouse network consists of different types of farms (commercial, n=84; backyard n=56) together with specific links between them and their traders (n=169) and slaughterhouses (n=22). Of the total possible number of ties in this network (n=109,230) 412 were actually present. The proportion of possible ties that were present was 0.004, indicative of a network of relatively low density. The out-degree centralisation index for this network was 0.02, indicating a low organisation of off-farm and off-trader movement of pigs around main focal nodes. Modification of an existing slaughterhouse information system was effective in allowing the development of a system that could trace back slaughtered animals to source farms and thus allow the construction of a network of animal movement. The network structure for node-to-node movement of pigs was characterised by a very small number of network hubs that were influential in movement of pigs through this network. Identifying those nodes is of great importance for controlled animal movement programmes.