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# Risk factors associated with *Mycoplasma capricolum* subspecies *capripneumoniae* and morbillivirus infection in small ruminants in Tanzania

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## Abstract

Mortality of domestic small ruminants caused by contagious caprine pleuropneumonia (CCPP) and Peste des petits ruminants (PPR) is frequently reported in Tanzania. A cross-sectional survey was conducted between June, 2016 and July, 2017 to identify risk factors for small ruminants exposure to *Mycoplasma capricolum* subsp. *capripneumoniae* (*M. capripneumoniae*), the causative agent of CCPP, and small ruminant morbillivirus (SRMV), the causative agent of PPR. Antibody detection was done using competitive enzyme-linked immunosorbent assays (cELISA); similarly, a semi-structured questionnaire was administered in flocks where serum samples were collected. Individual seropositivity for *M. capripneumoniae* was 6.5% (n = 676) and 4.2% (n = 285) in goats and sheep respectively, whereas SRMV was 28.6% in goats (n = 676) and 31.9% in sheep (n = 285). Multivariable analysis indicated that mixing of flocks was a risk factor for exposure to *M. capripneumoniae* ( $\chi^2 = 3.9$ , df = 1, p = 0.05) and SRMV ( $\chi^2 = 6.3$ , df = 1, p = 0.01) in goats. Age was a protective factor for SRMV seropositivity in both goats ( $\chi^2 = 7.4$ , df = 1, p = 0.006) and sheep ( $\chi^2 = 10.2$ , df = 1, p = 0.006). SRMV seropositivity in goats was also influenced by grazing in contact with wild animals ( $\chi^2 = 5.9$ , df = 1, p = 0.02) and taking animals to the animal markets ( $\chi^2 = 8.2$ , df = 1, p = 0.004). *M. capripneumoniae* and SRMV are influenced by several risk factors and their control needs concerted efforts between stakeholders, which may include community involvement in mandatory vaccination and animals' movement control.

## Keywords

Contagious caprine pleuropneumonia; Domestic small ruminants; Peste des petits ruminants; Risk factors