

ABSTRACT

Clinical endometritis (CLE) and subclinical endometritis (SCLE) manifesting at the cow- and herd-levels has been associated with multiple risk factors (RFs), but hardly are RFs with direct influences separated from those with mediated indirect influences. This study identified and quantified the direct and indirect associations of cow- and herd-levels RFs with CLE and SCLE cases observed among 466 zero-grazed dairy cows that were in their 21-60 days postpartum (dpp). The cases were observed in a cross-sectional survey of smallholder farms (n = 370) in Rwanda. The direct and indirect associations were constructed with odds ratio (OR) derived from multiple logistic regression modelling. The cow-level RFs that had direct positive association with CLE and SCLE were the season of calving (OR: 5.0, 2.1), dystocia (OR: 1.9, 2.2), poor body condition score (OR: 4.1, 2.2), stillbirth (OR: 3.5, 3.3), and retained placenta (OR: 1.4, 1.8) while mastitis (OR: 2.5) and parity (OR: 1.5) had a direct positive association with SCLE. Breed and parity of cow, sex of calf, and twin births had indirect positive association with both CLE and SCLE cases. At the herd-level, unhygienic cowshed (OR: 25.1, 8.9) had direct positive association with both CLE and SCLE cases. In contrast, earthen floor cowshed (OR: 6.6) and large herd size (OR: 3.1) had direct positive association with CLE and not using bedding materials (OR: 1.5) had direct positive association with SCLE. Herd-level RFs that showed indirect positive association with both CLE and SCLE cases were farm size (OR: 2.9) and farmer's experience in dairying (OR: 1.7) while housing cows within the first 30 dpp (OR: 0.1) showed indirect negative association. These results show which RFs have strong direct and indirect influences on CLE and SCLE cases at the cow- and herd-levels. Effective management of those RFs should be a priority in extension education and services to enable smallholder farmers effectively manage them to prevent and control endometritis among their zero-grazed dairy cows.

Keywords: Clinical endometritis; Cow-level risks; Herd-level risks; Path analysis model; Smallholder herds; Subclinical endometritis.