

ABSTRACT

On-farm hygienic practices are important in assuring quality and safety of milk for consumers and for reducing losses at production and at post-harvest. This study investigated the relationship between milking practices, mastitis as well as milk somatic cell counts (SCC) and the effects of high SCC on milk production and post-harvest losses (PHL) in smallholder dairy ($n = 64$) and pastoral camel ($n = 15$) herds in Kenya. The collected data included milking practices, mastitis test on udder quarters ($n = 1236$) and collection of milk samples for laboratory analyses: SCC, detection of *Staphylococcus aureus* and *Streptococcus species*. Production losses were computed as a proportion of cows and herds with SCC ($>200,000$ cells/mL) and PHL as quantity of milk exceeding 4×10^5 cells/mL. Practices associated with production herds included hands, udder washing and drying, and milk let down stimulation with calves suckling or manually ($p < 0.001$). Udder drying was only applied in peri-urban herds (100%). Herd level prevalence of mastitis was lower in smallholder than in pastoral herds (60.7% vs 93.3%). Mastitis positive samples had higher prevalence of *S.aureus* than of *Streptococcus species* in both smallholder (57.9% vs 23.7%) and pastoral (41.6% vs 36.5%) herds. Moreover, SCC was significantly affected by presence of mastitis and *S.aureus* ($p < 0.001$). Milk PHL from high SCC was higher in smallholder rural herds (27%) compared to peri-urban (7%) and in pastoral peri-urban (81%) compared to rangelands (76%). Milking practices may have contributed to maintain mastitis pathogens in herds. This has led to substantial pre and postharvest milk losses in smallholder and pastoral herds. Therefore teat dipping, dry cow period and herd level mastitis treatment may complement current practices for lower SCC and milk PHL.