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Short Communication

Prevalence and epidemiology of udder and teat affections in dairy cattle and buffaloes: A retrospective study

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Abstract

Udder and teat affections remain a significant challenge to dairy production, contributing to reduced milk yield, mastitis susceptibility, and premature culling. This retrospective study analyzed clinical records from the IVRI Polyclinic and the Livestock Production Research Centre (Cattle & Buffalo), Izatnagar, for the year 2003. Prevalence was assessed by species, breed, season, and lactation stage. Buffaloes showed higher prevalence (18.36%) than cattle (12.5%) in clinical cases, whereas organized herds recorded higher affections in cows (16.8%) compared to buffaloes (4.8%). Lesions were more frequent in Murrah buffaloes and non-descript cattle, with peak incidence during winter and early lactation. Teat affections slightly predominated over udder lesions. Findings highlight the economic significance of these disorders and emphasize the need for improved diagnostics, minimally invasive surgical methods, and strict hygienic milking practices to reduce prevalence and improve outcomes.

Keywords: Buffaloes, Cattle, Epidemiology, Prevalence, Teat and udder affections

Highlights

- Udder and teat affections were more prevalent in buffaloes than in cattle.
- Seasonal variation showed peak prevalence during winter in both species.
- Lactating animals, particularly in early lactation and second lactation order, were more susceptible.
- Teat affections were slightly more common than udder lesions across species.
- Preventive housing, hygienic milking, and modern diagnostic tools to reduce the economic losses.

India is the world's largest producer of milk, with buffaloes contributing more than half of the national output (Food and Agriculture Organization [FAO], 2022; Department of Animal Husbandry and Dairying [DAHD], 2023). Udder and teat health is critical for sustaining production but is frequently compromised by traumatic, infectious, and environmental conditions (Singh et al., 2022). Such affections reduce productivity and increase culling rates. Although diagnostic advances such as ultrasonography and theloresectoscopy have improved lesion detection (Rathod et al., 2009; Annika et al., 2024), epidemiological data from Indian herds remain limited. This short communication provides a concise analysis of clinical and herd-level data on bovine udder and teat affections.

Clinical records of cattle and buffaloes with udder and teat affections presented at the IVRI Polyclinic and Livestock Production Research Centre (Cattle & Buffalo), Izatnagar, during 2003 were retrospectively analyzed. Cases were categorized by species, breed, lactation stage, and season. Lesions were grouped as teat affections (obstructions, fistulae, lacerations, thelitis) and udder affections (mastitis-associated lesions, abscesses, necrosis). Prevalence was calculated relative to total animals presented or maintained in herds. Seasonal distribution was classified as summer, rainy, and winter. Statistical comparisons were made using chi-square tests.

A total of 547 bovines were examined during the study period, comprising 181 buffaloes and 366 cows. Out of these, 88 animals were found to be affected, resulting in an overall prevalence of 16.05%. Species-wise analysis revealed that 33 out of 181 buffaloes were affected, showing a higher prevalence of 18.36%, whereas 46 out of 366 cows were affected, with a comparatively lower prevalence of 12.5%. In cattle, non-descript breeds were more affected (62.5%) than crossbreds (37.5%). All affected animals were adults; therefore, age-related correlations could not be

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established. Seasonal occurrence showed a maximum prevalence during winter (50%), followed by summer (37.5%) and the rainy season (12.5%). In buffaloes, the Murrah breed accounted for the majority of cases (55.5%), and seasonal patterns showed a similar winter predominance (61.1%), followed by rainy (33.3%) and summer (5.6%) cases.

At the organized dairy herd, the overall prevalence of udder and teat affections was 14.28%, with cows (16.8%) more affected than buffaloes (4.8%). Among crossbred cows, the prevalence was highest in Friesian-Brown Swiss-Hariana (37.25%), followed by Friesian-Jersey-Hariana (33.33%) and Friesian-Hariana (29.42%). Age-wise analysis indicated equal prevalence (25.49%) in the 2–4, 4–6, and 6–8 years age groups, with a subsequent decline in older animals.

Lactating cows were more affected (23.53%) compared to dry cows. The maximum prevalence was recorded in the second lactation order (29.41%), followed by first, third, and fourth orders (15.69%, 13.73%, and 13.73%, respectively). The prevalence declined steadily in higher lactation orders. Affections were most common in the first month of lactation (37.25%), decreasing thereafter across subsequent months. Teat (50.98%) and udder (49.02%) lesions were almost equally distributed. Seasonally, prevalence was highest in winter (39.92%) and comparable between summer (29.41%) and rainy season (31.37%).

In buffaloes, all cases were observed in the Murrah breed. Most affected animals were 4–6 years old (75%) compared to 2–4 years (25%). Affections were equally distributed between the first and second lactation orders. Lactating buffaloes (75%) were more affected than dry animals (25%). The maximum prevalence was recorded in the first and second months of lactation (25% each), while the remaining cases were noted in the late lactation stage (11–12 months). Teat affections (75%) predominated over udder affections (25%). Seasonally, half of the cases occurred in winter, with the remaining distributed equally between summer and rainy seasons.

The present study highlights important epidemiological features of udder and teat affections in dairy bovines under both clinical and herd settings. The overall higher prevalence in buffaloes compared to cattle corroborates earlier reports suggesting anatomical differences and milking practices make buffaloes more prone to teat injuries and related disorders (Ramaswamy, 2001; Venkatesan et al., 2024). Similar observations have been made in recent studies, where buffaloes were found to be more susceptible to teat obstructions and inflammatory conditions than cattle (Abd-El-Hady, 2015). Seasonal variation was an important factor, with peak prevalence during winter in both species. This finding aligns with earlier reports linking cold stress to vascular spasm, necrosis, and teat ulceration (Nouh et al., 2014; Vilas et al., 2023). The seasonal predisposition could also be attributed to reduced blood circulation to extremities in cold weather, as well as changes in housing and milking routines. Studies in the past five years confirm that winter management, especially provision of warmth and improved housing, significantly reduces the incidence of udder and teat lesions (Rathod et al., 2009; Singh et al., 2022). Lactational status and order emerged as significant risk factors. The higher occurrence in lactating animals and particularly in the second lactation underscores the role of peak milk yield, udder engorgement, and frequent handling in predisposing animals to teat and udder lesions. Declining prevalence in later lactations may be due to culling of susceptible animals or reduced productivity in older cows. Recent epidemiological studies also emphasize that the early months of lactation are critical risk periods for both mastitis and teat affections (Singh et al., 2022; Vilas et al., 2023). The observation that teat lesions were slightly more frequent than udder affections is consistent with earlier findings that teats are more vulnerable to trauma and infection due to their anatomical location and repeated exposure during milking (Thilager et al., 1992). In buffaloes, the predominance of teat affections (75%) compared to udder affections mirrors similar findings in Murrah buffaloes reported from northern India (Thilagar et al., 2000; Singh et al., 2022). Recent advances between 2020 and 2024 provide new avenues for diagnosis and prevention. Ultrasonography and teat endoscopy (theloresectoscopy) allow early identification of obstructive and inflammatory lesions (Rathod et al., 2009; Singh et al., 2022). Minimally invasive surgical techniques have improved outcomes for obstructive and fistulous conditions, while strict milking hygiene and improved housing management significantly reduce new cases (Cheng & Han, 2020; Vilas et al., 2023). Moreover, global emphasis is now shifting towards preventive herd-level approaches, including robotic milking, selective breeding for teat-end conformation, and improved housing microclimate management (FAO, 2022; DAHD, 2023). Overall, the study underscores that buffaloes, especially the Murrah breed, remain particularly vulnerable to udder and teat affections. Seasonal management, early lactation monitoring, and adoption of modern diagnostic and preventive technologies are critical for minimizing

economic losses and improving animal welfare in Indian dairy herds.

Udder and teat affections remain an important constraint in dairy production, with buffaloes more frequently affected than cattle. Seasonal influence, particularly during winter, and higher susceptibility during early lactation and lower lactation orders were evident. The predominance of teat affections underscores their vulnerability to trauma and infection. These findings reinforce the importance of preventive management, hygienic milking, and timely diagnosis using modern tools to minimize economic losses and support sustainable dairy productivity.

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Author's contributions: MH: Conceptualization; RT: Data collection & manuscript drafting; RK: Data analysis; RD: Critical revision. All authors approved the final manuscript.

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