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Posted Date: 14 July 2025

doi: 10.20944/preprints2025071080.v1

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Article

# Assessment of Prevalence of Clinical and Subclinical Mastitis in Dairy Cattle in West Arsi Zone, Ethiopia

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## Abstract

This study was conducted to assess the prevalence of both clinical and subclinical mastitis in lactating dairy cows in selected districts of the West Arsi Zone, Ethiopia. A cross-sectional study was conducted on 200 lactating cows across 40 dairy farms. Clinical mastitis was diagnosed via physical examination, while subclinical mastitis was detected using the California Mastitis Test (CMT). Overall mastitis prevalence was 41.5%, including 9.5% clinical and 32% subclinical. Crossbred cows showed the highest prevalence (51.8%), followed by local (26.5%) and exotic breeds (21.7%). Older cows (>9 years) and cows in late lactation stages exhibited significantly higher mastitis rates. Risk factors included breed, age, parity, lactation stage, production system, and hygiene practices. The study underscores a high burden of subclinical mastitis and the critical influence of management and hygiene. Control efforts should focus on early detection, improved milking hygiene, and better cow housing.

**Keywords:** mastitis; clinical mastitis; subclinical mastitis; dairy cattle; prevalence; Ethiopia

## 1. Introduction

Mastitis remains one of the most economically significant diseases in dairy production globally. It reduces milk yield, alters milk composition, and increases veterinary costs [1,2]. The disease occurs in two forms: clinical, marked by visible inflammation and milk abnormalities, and subclinical, which lacks external signs and requires diagnostic tests such as the California Mastitis Test (CMT) or somatic cell counts (SCC) [3–5].

In Ethiopia, the burden of mastitis is exacerbated by poor management practices, limited veterinary support, and traditional milking systems. Several local studies have revealed alarming prevalence rates across various regions [6–9]. However, data specific to the West Arsi Zone remain limited.

The objective of this study was to estimate the prevalence of clinical and subclinical mastitis in dairy cows in the West Arsi Zone and to identify associated risk factors, providing evidence for strategic interventions.

## 2. Materials and Methods

### 2.1. Study Design and Area

A cross-sectional study was conducted between December 2023 and October 2024 in selected districts of the West Arsi Zone, Oromia Region, Ethiopia.

## 2.2. Sample Size and Selection

A total of 200 lactating cows from 40 dairy farms were randomly selected. The sampled cows included various breeds (local, crossbred, exotic) and were kept under intensive, semi-intensive, and extensive management systems.

## 2.3. Data Collection

Information on breed, age, parity, lactation stage, housing floor type, milking hygiene, and production system was collected using structured questionnaires and observations.

- Clinical mastitis was diagnosed based on signs such as udder swelling, heat, pain, and abnormal milk.
- Subclinical mastitis was detected using CMT.

## 2.4. Data Analysis

Data were entered into SPSS version 25. Descriptive statistics and Chi-square tests were applied to determine associations between mastitis prevalence and risk factors. Significance was set at  $p < 0.05$ .

# 3. Results

## 3.1. Overall Mastitis Prevalence

Among the 200 cows examined, 83 (41.5%) had mastitis: 19 (9.5%) with clinical and 64 (32.0%) with subclinical forms.

**Table 1.** Proportion of Mastitis in Sampled Dairy Cows.

Mastitis Type	No. of Cases	Percentage (%)
Clinical	19	9.5%
Subclinical	64	32.0%
<b>Total</b>	<b>83</b>	<b>41.5%</b>

## 3.2. Mastitis by Breed

Crossbred cows were more affected (51.8%) than local (26.5%) and exotic breeds (21.7%).

**Table 2.** Mastitis Prevalence by Breed.

Breed	No. of Cases	Percentage (%)
Crossbred	43	51.8
Local	22	26.5
Exotic	18	21.7

## 3.3. Mastitis by Age

Older cows (>9 years) had the highest prevalence (92.8%).

**Table 3.** Mastitis Prevalence by Age.

Age Category	No. of Cases	Percentage (%)
3–6 years	2	2.4
6–9 years	4	4.8
>9 years	77	92.8

### 3.4. Other Risk Factors

- Cows with higher parity (>6 calves) and late lactation stages (>8 months) had increased mastitis.
- Farms with poor hygiene, bad floors (muddy), and located in rural settings had significantly higher rates.

## 4. Discussion

The overall prevalence of mastitis (41.5%) aligns with findings in other Ethiopian studies [6,8,10]. Subclinical cases dominated, consistent with global observations that subclinical mastitis often goes undetected yet poses greater cumulative losses [1,4,11].

Crossbred cows were significantly more affected, possibly due to their higher milk yield demands and susceptibility to environmental stressors [12]. Older cows and those with more parities were more prone, likely due to prolonged exposure and declining udder integrity [2,13].

Poor milking hygiene and housing conditions were key contributors, as noted in prior Ethiopian studies [9,10]. Such environments increase pathogen exposure and mastitis risk [3,14].

## 5. Conclusion

This study confirms that mastitis, especially in its subclinical form, is a significant problem among dairy cattle in West Arsi Zone. Critical risk factors include breed, age, parity, hygiene practices, and housing. Enhanced mastitis control through better management, regular screening, and training of farm personnel is recommended.

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