

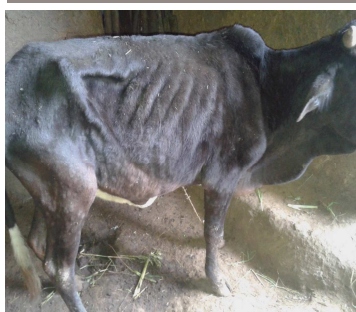
# Seroprevalence and risk factors of lumpy skin disease in Ethiopia

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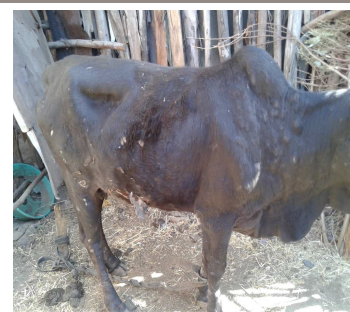
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## 1. Background

- Lumpy skin disease (LSD): a major endemic livestock disease in Ethiopia
- Caused by LSD (Neethling) virus.
- Affects cattle but also observed in domestic Asian water buffaloes with typical nodular lesions on the skin (Figure 1 and 2).
- Morbidity of the disease varies from 5% to 100%.
- LSD has major economic impact: reduced production, death, trade restrictions, costly control and prevention measures.

**Figure 1.** Depressed and emaciated LSD affected cow



**Figure 2.** An LSD affected ox with extensive skin sloughing.

## Objective:

To estimate the seroprevalence and to identify risk factors contributing to the occurrence of lumpy skin disease.

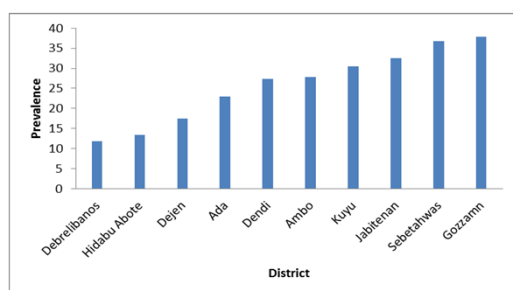
## 2. Methods

- A cross-sectional study in central and north-western part of Ethiopia.
- Multistage cluster sampling.
- 2386 cattle sera, 605 herds, 30 clusters (kebeles), 10 districts.
- Virus neutralization test (SE: 96%, SP: 100%).
- Farmer interview for putative risk factors.

## 3. Results

### 3.1. Seroprevalence

- Apparent animal level and herd level prevalence for LSDV antibodies: 25.4% and 48.9%, respectively. Large variation between districts (Figure 3).
- The true overall animal level and herd level prevalence: 26.5% and 51.0%.



**Figure 3.** LSD Seroprevalence in 10 districts of Ethiopia.

### 3.2. Intracluster correlation coefficient

- The inter-cluster variance was estimated as 0.382 (Table 1),
- Intraclass correlation coefficient (ICC) 0.104,
- Design effect (D) 9.2 and
- Precision level (standard error) for the unadjusted animal level prevalence 2.7%.

### 3.3. Risk factors for LSD serostatus

- Age group  $\geq 4$  years, contact with other animals and presence of water bodies were significantly associated with LSD status (Table 1).

**Table 1.** Final multivariable model of risk factors related to lumpy skin disease at individual animal level using mixed effect logistic regression model including kebele as random effect.

Risk factors	Coefficient	Standard error	Odds ratio (95% CI)	P-value
Age group: 0.5 $\leq$ 1 year			1	
1-4 years	0.32	0.214	1.38 (0.90-2.09)	0.136
$\geq 4$ years	0.89	0.192	2.44 (1.67-3.55)	0.000
Contact with other animals	-0.89	0.302	0.41 (0.23-0.74)	0.003
Presence of water bodies	0.47	0.229	1.61 (1.03-2.52)	0.038
Intercept	-1.34	0.379		0.000
Inter-kebele variance	0.382	0.125		

## Conclusion

- High prevalence indicates serious economic consequences.
- Areas endowed with water bodies should get priority for application of control measures.

## Acknowledgement

The authors thank Nuffic (Netherlands Organization for International Cooperation in Higher Education) for funding this study. We also thank NAHDIC, NVI and Veterinary Services Directorate of Ethiopia for the material and logistic support and allowing their facilities.



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