Prevalence of lameness in crossbred and Tharparkar cattle: A comparison

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Abstract

Prevalence study is a significant epidemiological tool to assess burden of disease in a population. Lameness in cattle is economically significant disease associated with production, reproduction and animal welfare. In the present study, year wise prevalence varied from 4.10 to 31.84% in crossbred cattle, while 3.49 to 23.26% in Tharparkar cattle. Average prevalence of lameness in crossbred and Tharparkar was 13.67 and 11.05%, respectively. Occurrence of lameness in crossbred cattle was maximum in rainy season followed by winter and summer seasons.

Keywords: Prevalence, lameness, crossbred, Tharparkar

Introduction

The prevalence and incidence of a disease are among the most fundamental measures in epidemiology. Prevalence is a measure to assess the burden of a disease in a population at a particular point in time. This epidemiological tool assesses the need for health services and examines trends in disease or severity over time. It can be estimated as number of cases of the condition/ disease at a particular point in time. The study of prevalence of disease is important due to several reasons. Prevalence estimates of a disease provides context for diagnostic, preventive and curative decision-making. Prevalence studies generate an idea about burden of disease, therefore identifies priorities in healthcare and policy making. Assessment of interventions based on baseline risk for a disease in a population and development of health economics models are other outcomes of prevalence studies. Lameness in bovines is a multi-factorial systemic disease, which occurs in several distinct clinical forms and is characterized with local exposition in the claws. Most common clinical manifestations during lameness are tissue damage, pain, discomfort and inability to walk. Lameness can be defined as a clinical sign or symptom of a disorder that causes a disturbance in locomotion or change in gait resulting from pain or discomfort of hoof and leg injuries. Lame cows can experience long-duration pain and discomfort. Recently, lameness and its welfare implications have become one of the most widely acknowledged problem in organized intensive cattle farming system. It is an economically significant production disease and losses include reduced quality and quantity of milk, weight loss and death. Along with infertility and mastitis, lameness is ranked among the top three most common disorders of dairy cows. Decreased productive and reproductive performance, premature culling with rising treatment cost are the most common impact of the disease. Culling level is higher for lame cows with claw lesions and reduced milk yield. Approximately, 16% of dairy cattle are culled and slaughtered in the United States due to lameness. Consequently, decreased carcass value is reported in culled cows. Losses due to lameness are 260 US dollars/ year/ cow in the US. Lameness and hoof disorders are also noted in Indian cows.

Materials and Methods

Experimental Layout

In present study, prevalence of lameness was explored and compared in crossbred and Tharparkar cattle. For this, all lameness cases, noted between 2008 and 2018 were recorded year-wise from the sickness register of Cattle and Buffalo Farm, IVRI, Izatnagar. The crossbred cattle included in this study was Vrindavani cattle (Exotic: Holstein Friesian, Brown Swiss and Jersey (50-75%) and indigenous: Haryana (25-50%).
Specifications
Some of the animals were found affected by lameness repetitively. Repetition of lameness in an individual after cure was considered as separate case. Animals more than one year of age were considered at risk for lameness. Mid-Year population was considered population at risk.

Data Analysis
Mid-year population of animal was calculated by taking average of populations at 1st January and 31st December of respective years. Year wise prevalence was calculated using following

\[
\text{Prevalence } \% \ (\text{Year wise}) = \frac{\text{No. of cases in a year} \times 100}{\text{Total no. of cases in a year}}
\]

The mid-year population of the animals at risk of lameness

Average prevalence for cumulative years was calculated by

Table 1: Year- wise prevalence of lameness in crossbred and Tharparkar cattle

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of animals affected</th>
<th>Mid-year population</th>
<th>Prevalence per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crossbred</td>
<td>Tharparkar</td>
<td>Crossbred</td>
</tr>
<tr>
<td>2008</td>
<td>64</td>
<td>8</td>
<td>452</td>
</tr>
<tr>
<td>2009</td>
<td>25</td>
<td>6</td>
<td>458.5</td>
</tr>
<tr>
<td>2010</td>
<td>43</td>
<td>15</td>
<td>419.5</td>
</tr>
<tr>
<td>2011</td>
<td>28</td>
<td>10</td>
<td>334.5</td>
</tr>
<tr>
<td>2012</td>
<td>12</td>
<td>3</td>
<td>293</td>
</tr>
<tr>
<td>2013</td>
<td>33</td>
<td>7</td>
<td>301.5</td>
</tr>
<tr>
<td>2014</td>
<td>53</td>
<td>4</td>
<td>308</td>
</tr>
<tr>
<td>2015</td>
<td>43</td>
<td>10</td>
<td>334</td>
</tr>
<tr>
<td>2016</td>
<td>56</td>
<td>10</td>
<td>330.5</td>
</tr>
<tr>
<td>2017</td>
<td>56</td>
<td>10</td>
<td>307</td>
</tr>
<tr>
<td>2018</td>
<td>93</td>
<td>20</td>
<td>292</td>
</tr>
</tbody>
</table>

Average prevalence of lameness in Crossbred and Tharparkar cattle was 13.67% and 11.05% respectively. There was no significant difference in the prevalence of crossbred and Tharparkar cattle.

Discussion
In our investigation the average prevalence of lameness in Crossbred and Tharparkar cattle was 13.83% and 11.05% respectively. In United Kingdom, the prevalence of lameness varied from 25 to 35% [5, 21, 22, 23]. Incidence of lameness in Great Britain ranged from 5.5 to 65% [24, 25, 26, 27]. In New York State, the incidence of lameness within the first 70 days of lactation varies from 27 to 54% [28]. The incidence of lameness in Karan Fries crossbred cows was 65.54% [29] with 22.97% mild, 14.19% moderate, 21.62% lame and 6.75% severe cases. There are several reports of prevalence of lameness from different parts of India like 65.54% in KF cattle in Karnal [29], 9.42% in organized farms of Darjeeling district of West Bengal [27], 5.2 and 2.72% in cattle and buffalo respectively in and around Navsari district of Gujarat [30]. Our results were quite comparable with the studies of [27]. Incidence of lameness in Gir (19.48%) cattle was higher in comparison to crossbred cattle (10.39%) [30]. [31] reported 16.04% prevalence of lameness in a targeted milk producing population of Vrindavani Cattle at IVRI, Iztanagar, Uttar Pradesh. Difference in management is very important factor for the diseases like lameness. Highest and lowest prevalence of lameness for different breeds in same year justifies aforesaid fact. Further, outbreak of some infectious disease like Foot and Mouth Disease, Foot Rot and Bovine Digital Dermatitis may be the cause of higher prevalence in farm and field conditions. In our study, out of total cases of lameness in crossbred cattle, occurrence of disease was maximum in rainy season (43.7%) followed by winter (30.17%) and summer (26.13%). Higher occurrence of lameness in monsoon season may be due to higher humidity. Several researchers have found higher incidence of lameness in winter than in summer [25, 32].

Conclusion
From the current study, it could be concluded that prevalence of lameness do not differ significantly in crossbred and Tharparkar cattle at an organised farm. Year wise variation of prevalence in lameness was mainly due to different managemental practices across the years.

References


