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Economic Impact of Subclinical and Clinical Mastitis in Odisha, India

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A B S T R A C T

The present investigation was carried out to evaluate the economic loss due to subclinical and clinical mastitis in bovines. Data were collected from a primary field survey of the selected households by personally interviewing the household heads (100 farmers) with the help of a comprehensive and pre-tested questionnaire specifically designed for the study. Economic impact of mastitis was assessed by calculating production loss (milk yield loss and discarded milk) during mastitis, post treatment milk yield loss for 30 days and cost of treatment. There was a total economic loss of Rs. 7824/- in one month per cow.

Introduction

The livestock sector of India plays a pivotal role in the national economy and serves as an integral part of Indian agriculture in providing livelihood support to millions of rural households. The livestock sector contributes 28% of the country's agriculture gross domestic product and about 5% of the country's overall gross domestic product. Among the animal diseases which affect the profitability of rearing animals, mastitis is considered to be one of the expensive diseases in terms of production losses (Bardhan, 2013). The losses are the potential revenues not earned, while the control costs are actual expenditures related to treatments, preventive measures, and additional labour used by them (McInerney *et al.*, 1992).

Materials and Methods

The present survey was conducted in ten districts of Odisha involving the subclinical and clinical cases of mastitis in cattle and buffaloes. Data were collected from a primary field survey of the selected households by personally interviewing the household heads with the help of a comprehensive and pre-tested questionnaire specifically designed for the study. Data were also collected on socio-economic and farm characteristics of the households, production parameters, components of economic losses due to

diseases, productive losses, costs incurred in control/treatment. Economic impact of mastitis was assessed by calculating production loss (milk yield loss and discarded milk) during mastitis, post treatment milk yield loss for 30 days and cost of treatment. 100 farmers were interviewed in this process and the data collected was analysed to evaluate the economic loss due to mastitis. The loss of milk during treatment period was calculated by the difference between average milk potential of each animal before and after treatment and it was multiplied by prevailing milk price to arrive at value of milk loss due to the disease.

Results and Discussion

Economic impact of clinical mastitis is depicted in Table 1.

The average milk yield loss in clinical mastitis was 4.65 litres/day. The average discarded milk yield in clinical mastitis was 5.25 litres/day. The total production loss due to clinical mastitis (Rs./day) was 9.9 litres/day. As the current average selling price of milk is Rs. 30 / Litre this accounted for a production loss of Rs. 297/- per day. The treatment of clinical mastitis was continued for 7 days. Hence the loss due to low milk yield as well as milk withdrawal period of 7 days accounted for a loss of Rs 2079/-. Post treatment milk yield loss / day was 4.05 litres (avg.). This accounted for a total loss of Rs. 3645/- in a month. Treatment with appropriate antibiotic after the antibiotic sensitivity test was continued for 7 days. The cost of treatment was Rs. 2100/- for the period of therapy. All together there was a total economic loss of Rs. 7824/- in one month per cow.

Economic Impact of sub-clinical mastitis

The average milk yield loss in sub-clinical mastitis was 2.58 litres/day. This accounted for a production loss of Rs. 77.4/- per day. There was a total economic loss of Rs. 2322/- per cow / month. Bardhan (2013) had reported average loss due to mastitis per animal per month to be INR 3206.55, INR 2119.67 and INR1708.89 in optimistic scenario and INR3549.59, INR 2448.03 and INR 1934.78 in pessimistic scenario in case of CB cows, indigenous cows and buffaloes, respectively. He included replacement cost was also included in the total cost of mastitis in addition to production loss and treatment cost. Singh *et al.,* (2014) reported that total economic loss was INR 5, 210 in ND cattle, INR 36, 795 in CB cattle and INR 24, 175 in buffalo during their study period of 1 year. They also reported that economic loss per animal per lactation was INR 868, INR 1314 and INR 1272 in case of ND cattle, CB cattle and buffaloes, respectively. Sasidhar *et al.,* (2002) had reported from an organized dairy farm in Hyderabad a loss of INR 326 per infected cow due to mastitis. Thirunavukkarasu and Prabaharan (1999) had reported that total loss in affected crossbred cows and buffaloes were INR 536.25 and INR 404.73 per lactation, respectively. Such variations in results of different studies might be attributed to variation in milk price in different regions, different amount of milk production from different species and breeds of animals as well as variation in ago-climatic conditions.

In our study the pooled data from indigenous cows, crossbred cows and buffaloes were collected from the owners and analysed. Rathod *et al.,* (2017) reported that it is very difficult to generalize and compare the losses across the farms. The major part of the loss in lactating animal suffering from mastitis was due to cost of treatment which is in accordance with the findings of Singh *et al.,* (2014) who reported that the cost was found out to be INR 525 whose share was 60.46%t out of the total loss.

Table.1 Total economic losses due to clinical mastitis (INR)

Parameters	Amount of milk in Litres	Cost in Rs (@ Rs 30/ litre)
Yield loss / day (A)	4.65	139.5/-
Discarded milk / day (B)	5.25	157.5/-
Total Production loss/ day (A+B)	9.9	297/-
Total Production loss for 7 days	69.3	2079/-
Post treatment milk yield loss / day	4.05	121.5/-
Post treatment milk yield loss for 30 days (Rs.)	121.5	3645/-
Treatment cost/ day(Rs)	—	300/-
Total treatment cost / 7 days (Rs.)	—	2100/-
Total economic loss (Rs)	130.05	7824/-

The same figures in case of CB cows and Buffalo were INR 695.53 (52.92% of the total loss) and INR 647.36 (50.87% of total loss), respectively. The next major component of loss was production loss which included milk yield loss and discarded milk loss. In ND cows, production loss accounted for 39.53% of total loss. Yield loss and discarded milk loss was INR 316.67 and INR 26.67, which constituted 92.23% and 7.76% of production loss, respectively. In CB cows, production loss accounted for INR 618.56 which was 47.07% of total loss. Yield loss and discarded milk loss was INR 546.42 and INR 72.14, respectively, which was 88.33% and 11.66% of production loss, respectively. In buffaloes, production loss accounted for INR 625 and its share was 49.12% of total loss. Yield loss and discarded milk loss was INR 552.63 and Rs 72.36, which constituted 88.42% and 11.57% of production loss, respectively. Ozsvari *et al.*, (2003) had reported that production loss due to mastitis per infected animal accounts for 59%of total loss.

The economic losses due to subclinical form of mastitis were assessed in the study area and the total loss was in the range of INR 21,677/- to INR 88,340/- for one lactation period depending on the condition of the animal (Rathod *et al.*, 2017). However in our study, the value of economic loss due to mastitis was lower than Rathod *et al.*, (2017) as they included the loss due to selling of affected animal in a lower price than a healthy animal.

The present investigation was carried out to evaluate the economic loss due to subclinical and clinical mastitis in bovines. The findings of the study revealed that mastitis accounts for a great economic loss in cows and buffaloes. The total cost of treatment contributes the major proportion of the economic loss. Hence the clinical and subclinical mastitis should be targeted for development of suitable preventive measures to control the disease. In this regard, there is need for sustained active surveillance programmes and development and use of novel diagnostic procedures for early detection and prevention of mastitis.

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