

ECONOMIC LOSSES DUE TO *HAEMONCHOSIS* IN SHEEP AND GOATS

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ABSTRACT: *Haemonchosis* in sheep and goats is caused by *Haemonchus contortus*. Economic losses due to *haemonchosis* in sheep and goats were calculated in the present study. This disease cause great economic losses in terms of decrease in meat and milk production, loss of weight, treatment cost of diseased animal and additional labour required for handling such animals. The manifestation of disease occurs in the form of anaemia, anasarca, poor weight gain, emaciation and mortality. Also mortality rate is very high in young animals. However treatment gradually improved the vigor of animals. The data obtained from 4 districts depicted that the financial losses were of worth Rs. 8800.09 million annually in Pakistan over one year period. It was estimated that about 29% reduction in milk yield occurred due to *haemonchosis* so loss in Pak rupees is 134062.39 million annually. It was estimated that about 27 % reduction in weight that caused loss more than 40 million pak rupees. The losses due to this particular parasite are very higher in young animals. Its value may reach to several crores of Pakistan rupees. Mortality due to *haemonchosis* cause losses upto Pak Rs. 142902 million annually. Overall cost of treatment of *haemonchosis* is about Pak Rs.25 million annually.

Key words: Economic losses, *haemonchosis*, sheep, goats, Pakistan.

INTRODUCTION

Parasitic diseases pose serious threat to livestock farmers especially sheep and goats keepers. Parasitic diseases of ruminants are linked to the environment; interest in sustainable livestock production provides a challenge for those concerned with control and prevention of animal parasitism. *Haemonchosis* caused by *Haemonchus contortus* and *Haemonchus placei* is the most important disease of small ruminants in Pakistan [1]. Of these two species *Haemonchus contortus* is a predominant, highly pathogenic and economically important gastrointestinal parasite of sheep and goats [2], [3], [4]. These parasites are common blood feeders that cause anaemia, reduced productivity and can lead to death in heavily infected animals [5], [6], [7]. It has been estimated that each worm sucks about 0.05 ml of blood per day by ingestion or seepage from lesions [8]. The clinical pathology of *haemonchosis* includes lowered packed cell volume, haemoglobin concentration, erythrocyte counts and serum iron. Loss of millions of rupees occur due to infection in animals which are a great source of meat, milk, wool and hides throughout the world [9], [10], [11]. Retarded growth, poor production of milk, meat, wool, poor quality of skin and hides are known in ovines due to parasitic infection [12]. These parasites cause traumatic and tissue damages in abomasums, *Haemonchus contortus* is already well known for such damages. Death rate due to acute *haemonchosis* is very high and may go up to 50% in small ruminants [13]. Keeping in view the importance of the disease, the present study was planned to record the economic losses due to *haemonchosis*.

MATERIALS AND METHODS

Economic losses due to *haemonchosis* were determined on the basis of points as described by [14]. The costs of resources that are wasted on animals that die were calculated. In the estimation of economic losses, direct losses from total or partial were considered. Indirect losses

such as reduced weight, meat, milk, susceptibility to other infections, cost of treatment and impaired fertility were also estimated in this study as they are of great economic importance.

Survey of Veterinary Officers of Study Area:

Overall cost of treatment of *haemonchosis*, Effect on milk yield and body weight, the cost of veterinary fees, excessive expenditure on feed as a result of poor feed conversion efficiency, losses due to inefficient production were estimated from the study areas i.e., Lahore, Gujranwala, Sheikhpura, and Kasur. Weight loss of animals was estimated in experimental animals.

RESULTS AND DISCUSSION

The total loss in revenue because of *haemonchosis* in these areas can be calculated on the basis of the price of condemned abomasa at the rate of about Rs. 30/Kg. The data obtained from the slaughter house authorities of the Metropolitan Corporation Lahore, Gujranwala, Sheikhpura and Kasur depicted that the financial losses from the abomasa condemnation are about 293336400 kg worth Rs. 8800.09 million annually in Pakistan over one year period. It was estimated from the survey of veterinary officers that about 29% reduction in milk yield occurred due to *haemonchosis*. From the record of Pakistan it was noted that a total population of sheep and goats is approximately 24.6 and 52.6 million according to survey of livestock and Dairy Development Department. So that loss in Pak rupees is 134062.39 million annually. It was estimated that about 27 per cent reduction in weight was noted due to *haemonchosis*. Weight of animals was decreased 27% as it was estimated in experimental animals. Losses due to weight reduction were more than 40 million pak rupees. The losses due to this particular parasite are very higher in young animals. Its value may reach to several crores of Pakistan rupees. Mortality due to *haemonchosis* was also reported in the present study. It was estimated that due to *haemonchosis*,

losses may reach upto Pak Rs. 142902 million annually. Overall cost of treatment of *haemonchosis* is about Pak Rs.25 million annually as informed me by veterinary officers of the study areas i.e., Lahore, Gujranwala, Sheikhpura, and Kasur.

Gastrointestinal nematodes cost the Australian sheep industry \$369 million annually or around 8.7% of its total value [4]. Annual treatment costs due to *Haemonchus* parasite had been recently estimated to be \$26m, \$46m and \$103 for Kenya [15], South Africa [16] and India [17] respectively. The estimated production losses amount to Rs. 31.43 million per annum in sheep and goats slaughtered at Faisalabad abattoir-Pakistan [18]. Weight gain is an important parameter for evaluating the body condition of the animals when infected by *Haemonchus contortus*. Economic losses are related to productivity indexes, in particular to decrease in body weight that can range from 20 to 60% [19]. Mild infections can result in losses 10-30% of wool weight and also presence of dags cost extra labour at shearing. Dagg wool, dirty crutching and short wool removed at crutching have lower value than full length clean wool, and 15-55 % in live weight gain. The grazing of infective pastures by ewes between lambing and weaning can lead to losses of wool production over that 4 months period of the order of 40% compared to ewes grazing pastures of low infectivity [20]. *Haemonchus contortus* high fecundity leads to rapid contamination of pastures with larvae and high levels of ingestion cause acute death [21]. Chronic blood loss caused by lighter *Haemonchus contortus* burdens can result in anaemia, anorexia, reduction in body weight and wool growth, depression and death [22]. Wool growth and live weights were compared in groups of experimental animals there was a significant difference in live weight gain between groups or between infected animals and uninfected controls. Wool growth was also assessed, and this differed significantly between groups, the groups infected had a lower growth rate than uninfected controls.

Losses due to *haemonchosis* in sheep and goats are enormous. Young *haemonchus* are deeply embedded into the mucosa of the abomasa causing mechanical damage of the epithelial cells and may cause loss of appetite, diarrhoea (dehydration), anemia (loss of protein), reduced growth and even mortality especially in young susceptible animals [11], [12], [16]. This infection is present at least in 50% of ovines especially in sheep which one slaughtered at local slaughterhouses as revealed by frequent slaughterhouse visits. Therefore, it was derivable to study the damages caused to the abomasa of sheep by *haemonchus*. Indirect losses such as reduced weight, meat, milk, susceptibility to other infections, cost of treatment and impaired fertility are also estimated and included in the study. In Pakistan 30 per cent population of marshy areas are at risk [23]. As study was conducted in four major districts of Punjab province however the total sheep and goat affected due to *haemonchosis* are approximately 24.6 and 52.6 million respectively [24] respectively. The cost of average sheep and goat is 8-10 thousand Pakistan rupees. The overall economic losses due to *haemonchosis* in Sheep and goats are to the tune of several thousand crores of rupees annually. Death

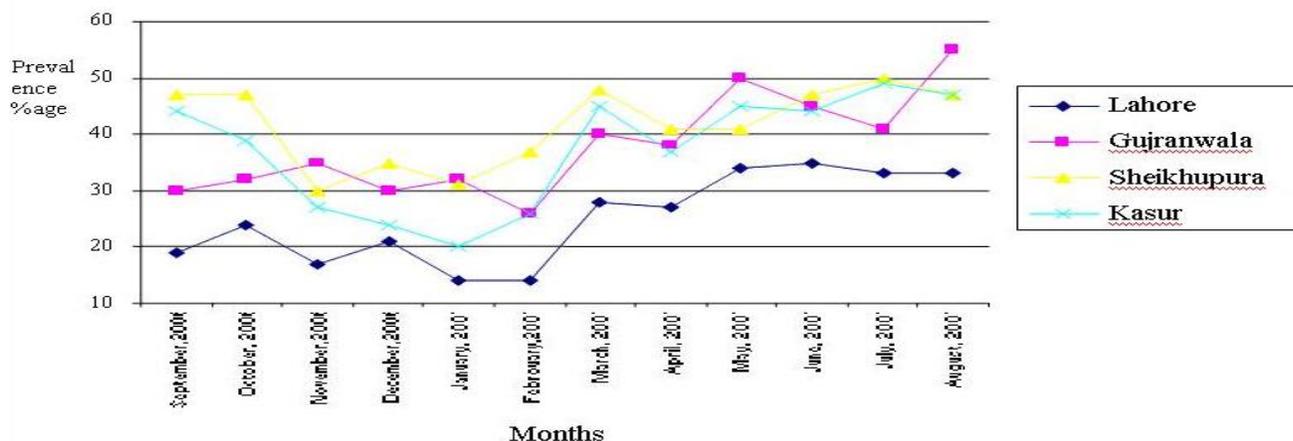
rate due to acute haemonchosis is very high. As in the present study it was seen that many severely affected young animal die due to haemonchosis. The author was unable to count their exact number. But many outbreaks occurred which caused heavy mortality rate. In Pakistan the estimated figures of losses due to mortality is about 894.3 millions. Chaudhry and Khan (1978) [24] and Ilha *et al.* (2005) [25] reported 10-20 per cent mortality due to parasitic diseases. Haemonchosis in goats affect the milk yield by causing 20-30 per cent reduction. However after treatment with different drugs 19-35 per cent increase in meat and milk yield was noted. This was also reported by different authors around the world [9], [10], [26]. It was noted that the price of on liter milk in Pakistan is about Rs 30/- per liter. Overall 10-20 per cent production was affected due to *haemonchosis*. The losses due to this disease come to several millions Pakistani rupees and thus indicate that it has great economic concern of the national economy. It was noted that the weight of animals was affected with the intensity of infection [27]. These animals also show poor efficiency in food intake and fertility [28]. In the present study, it was noted that after the treatment the weight of sheep and goats improved gradually as was also reported by various workers throughout the world [11], [13], [26]. It was indicated that animals' health improved gradually as they became free from parasitic burden and this also affected the economy of the livestock. The losses due to this particular parasite are very higher in young animals, [11]. Its value may reach to several millions of Pakistani rupees. An additional amount and labour is required for handling diseased animals. Treatments in most livestock farms depended on availability of money and drugs and not the epidemiology of parasites. A significant proportion of farmers especially in rural areas failed to follow their pre-planned treatment schedules due to lack of money and unavailability of drugs. Farmers in all management system mostly purchase anthelmintics from private veterinary drug shops. Many farmers had used the same type of anthelmintic for consecutive years continuously due to poor knowledge on the source of worm infection. It was concluded from the study that worm control in Pakistan faces serious constraints and that education of farmers is not adequate. Moreover poor quality control and high price of potent anthelmintics, few extension workers, low income and low education among farmers contributed significantly to erratic worm control practices and anthelmintic usage. To make profitable breeding and to avoid financial losses, establishment of interrelationships among disease, meat and milk yield, reproduction and herd management is necessary for developing a decision model for disease treatment. Veterinary education with regards to sheep health management should start with individual animal clinical work, which constitutes the basis of herd health advisory programmes. Developed country policy should actively combat accidental and intentional introductions, protect livestock against future advanced biological weapons, minimise the economic impacts after introduction by any means; abandon mass slaughter as a control tool; engage in disease removal in pursuit of a global economic, societal and environmental agenda and make

appropriate national and cooperative investments. Government and donors need to take active steps to facilitate the process of privatization of animal health services, especially those targeting the poorer rural subsistence and pastoralist farming systems. Both industry and public goals could be met from further research including location and

economic impact of livestock production. An integrated approach should be used in an interdisciplinary way by farmers, veterinarians, nutrition advisors and other relevant professionals for the improvement of animal health and welfare and producer profitability.

Table: 1: Total month wise %age of infection in slaughtered animals at Lahore, Gujranwala, Sheikhpura & Kasur.

Months	% age Prevalence District Wise			
	Lahore	Gujranwala	Sheikhpura	Kasur
September,2006	19	30	47	44
October, 2006	24	32	47	39
November,2006	17	35	30	27
December,2006	21	30	35	24
January, 2007	14	32	31	20
February,2007	14	26	37	26
March, 2007	28	40	48	45
April, 2007	27	38	41	37
May, 2007	34	50	41	45
June, 2007	35	45	47	44
July, 2007	33	41	50	49
August, 2007	33	55	47	47



Overall	24.92	37.83	41.75	37.25
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Figure 1: Overall monthly prevalence of *haemonchosis* in slaughtered sheep & goats.

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