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Impact of prophylactic vaccination on the profitability of the sheep farming

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Abstract

The present study was undertaken with an aim to evaluate the impact of prophylactic vaccination on profitability of sheep farming in District Bandipora. Accordingly, a questionnaire based survey was conducted in Bandipora district of Kashmir Valley. Overall 60 farmers with overall sheep heads and average flock size of 2805 and 46.97 ± 2.43 , respectively were interviewed by face to face contact method. The data were classified into vaccinated and unvaccinated groups for statistical analysis. The statistical analysis was carried by SPSS statistical package using unpaired t-test to compare means. The mortality, morbidity and medicinal costs invested for treatment of sheep were significantly ($P < 0.01$) higher in unvaccinated group than vaccinated group. The mortality, morbidity and medicinal costs invested for treatment of sheep in unvaccinated group were $12.25 \pm 1.32\%$, $26.43 \pm 2.66\%$ and 35.61 ± 3.16 Rupees, respectively. Similarly, the values observed in vaccinated group were $2.1 \pm 1.23\%$, $4.49 \pm 2.49\%$, 9.00 ± 2.96 Rupees, respectively for mortality, morbidity and medicinal costs invested for treatment of sheep. The present study revealed that prophylactic vaccination has significant effect on overall profitability of the sheep farming.

Keywords: Vaccination, Sheep, Kashmir, Mortality and Morbidity

Introduction

Sheep farming signifies an important component of rural economy particularly in the arid, semi arid and mountainous areas of the country. Sheep with its multi-facet utility for wool, milk, skins and manure play an important role in the livelihood of a large percentage of small/marginal farmers and landless labourers engaged in sheep rearing [1]. Morbidity and mortality are two important factors resulting in heavy losses in sheep production and improvement programmes. An effective and efficient disease prevention and control strategy is of paramount importance to improve the quality and quantity of livestock production in the Indian context [2]. Random vaccination programmes in this regard are a tool forward to ponder upon. Vaccinations can reduce the prevalence or severity of infectious diseases and are an integral part of any flock management programme [3]. Vaccination always has had a profound effect on the profitability with the only impediment being its holistic use. Compared to the subsidized costs of vaccine the cost incurred on mortality and morbidity is always huge. Vaccination protocols vary widely by production type, region, producer preference, diseases exposure, previous diseases problems and other flock specific aspects. With the introduction of the exotic blood in the flocks of Jammu and Kashmir, the spread of sheep pox had been drastic. Fortunately, the swift introduction of killed sheep pox vaccine by the Department of Sheep Husbandry, Kashmir the disease is now under control to a large extent. The other major epidemics faced by farmers in the Kashmir region are that of enterotoxaemia and PPR against which the department runs routine vaccination (Table 1). Recurring out breaks of various diseases in domestic sheep of Kashmir have prompted questions about the economic benefits and costs of vaccinating individual flocks against these diseases. In this regard a survey was conducted to assess the impact of prophylactic vaccination on net profitability of sheep rearing ventures in the district Bandipora (J&K).

Methodology

A questionnaire based survey was purposively undertaken in Aloosa area of Bandipora district of Kashmir Valley, owing to higher concentration of sheep, with an aim to evaluate the impact of prophylactic vaccination on net profitability of sheep farming.

The farmers were interviewed through face to face contact method. A total of 60 farmers were randomly selected for interview. The data were classified in vaccinated and unvaccinated groups and analysed in SPSS software [4]. The means were compared by unpaired t-test.

Results and Discussion

Average flock size was 46.97 ± 2.43 with the size of vaccinated and unvaccinated as 43.67 ± 3.32 and 50 ± 3.55 respectively (table 2). This average flock size falls into medium category and as the flock size increases net return is supposed to increase accordingly [5, 6, 7]. Similar flock size of sheep in Kashmir valley has been reported by Want, 2016 [8]. Overall mortality of $7.17 \pm 0.09\%$ was observed in the present study. However, higher mortality rate was observed by Makdooimi and Tufani, 2010 [9], Rather *et al.*, 2020 [10] and Bashir *et al.*, 2020 [11] in Kashmir Merino managed under organized condition. Significantly ($P < 0.01$) higher mortality was observed in group of unvaccinated animals ($12.25 \pm 1.32\%$) as compared to vaccinated one ($2.1 \pm 1.23\%$) (Table 2). Prevention is always better than cure and this has a special significance with sheep as they seem to respond less to treatment when sick than other livestock species. Bashir *et al.*, 2020 [11] and Makdooimi and Tufani, 2010 [9] have also reported higher mortality in Marino sheep caused by contagious diseases than non-contagious. The morbidity also followed the same pattern as mortality with significantly ($P < 0.01$) more morbid in unvaccinated (26.43 ± 2.66) as compared to vaccinated animals (4.49 ± 2.49) (Table 2). Earlier studies too have indicated similar morbidity due to various diseases like PPR and the scenario got drastically changed once intensive vaccination programme was put in place (12; 13; 14). Medicine cost for treatment of various diseases in sheep rearing revealed to be significantly ($P < 0.01$) more in unvaccinated (Rs 35.61 ± 3.16) group as compared vaccinated (Rs 9.00 ± 2.96) animals (Table 2). This indicates vaccination programme routinely followed by the Department of Sheep Husbandry has a significant effect on disease control and overall economy of sheep farmers.

Table 1: Detail account of Vaccination followed in the District Bandipora

	N1	N2	Flock Size	Mortality (%)	Morbidity (%)	Average Cost (Rs)
Overall	60	2805	46.97 ± 2.43	7.17 ± 0.09	15.47 ± 1.82	22.31 ± 2.17
Vaccinated	32	1398	43.69 ± 3.32	2.1 ± 1.23	4.49 ± 2.49	9.00 ± 2.96
Unvaccinated	28	1407	50.25 ± 3.55	12.25 ± 1.32	26.43 ± 2.66	35.61 ± 3.16

Table 2: Primary data of various parameters from questionnaire survey.

S. No.	Vaccine	Type	Cost of Vaccine
1	Sheep Pox	Killed	Free
2	Enterotoxaemia type-D	Inactivated	68paise
3	PPR	Live attenuated	Free

Conclusion

Prophylactic vaccination programme followed by the department of sheep husbandry Kashmir for prevention of various diseases in Sheep overall has benefitted sheep farmers in increasing the productivity and economic status. Mortality and morbidity were significantly lower in the animals receiving timely vaccination as compared to those not covered under vaccination umbrella. Overall medicine cost for the treatment of various diseases was low for the group receiving

vaccination as compared to those not having exposure to vaccination protocol.

Therefore, it is recommended that Department of Sheep Husbandry should cover all animals under vaccination programme to reduce morbidity, mortality and treatment of cost per animal. Thus, improving economics of sheep farming

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