Farmers' knowledge and adoption level on goat healthcare management practices in selected areas of India

Roy R[1*] and R Tiwari[2]

[1]Subject Matter Specialist (Animal Sc.), Darjeeling KrishiVigyan Kendra, Uttar BangaKrishiViswavidyalaya, Kalimpong-734301, West Bengal, India; [2]Principal Scientist and In-charge Agriculture Technology Information Centre, Indian Veterinary Research Institute, Izatnagar- 243122, Bareilly, Uttar Pradesh, India

Abstract

The study was taken up with the objective to find out the factors effecting knowledge and adoption of goat owners in healthcare management practices. The study was purposively conducted in West Bengal and Uttar Pradesh due to its high population and two highest goat meat producing states in the country. In all, 180 respondents were randomly selected for the study. The study revealed that majority of the goat owners had knowledge on different healthcare management practices but in respect to extent of adoption of these practices, it was found low. The study shows that majority of the goat owners had medium level of knowledge about healthcare management practices. The study also shows that education, landholding, mass media exposure, formal interpersonal contact and social participation are significantly and positively correlated with knowledge level whereas education, landholding, knowledge level, mass media exposure, formal interpersonal contact and social participation are significantly and positively correlated with adoption index of the goat owners in healthcare management practices. The study further reveals that mass media exposure, education, informal interpersonal contact, landholding and flock size were the main contributing factors to farmers' knowledge level in healthcare management practices whereas knowledge level in healthcare management practices, formal interpersonal contact, flock size and farming experience were the main contributing factors to farmers' adoption index in healthcare management practices. Thus, a holistic extension approach for goat owners needs to be taken up considering all the factors which can enhance the knowledge level in improved healthcare management practices resulting in adoption of these improved practices so that they can prevent morbidity and mortality in their farm and thereby reduce economic losses.

Key words: adoption level, goat owners, healthcare management, Knowledge level

Introduction

Goat is a friend of the weakest society and ray of hope in the areas where agriculture is not economically viable and ecologically sustainable. Goat contributes a significant source of supplementary income and family nutrition to these poor rural people. As per the Indian 19th Livestock census (2012), 26.40% of the livestock population in India is goat (135.17 millions). Uttar Pradesh (2nd) and West Bengal (4th) are the leading states and have a share of 11.53% and 8.51% respectively in goat population (GOI, 2012). India's goat meat production in 2012-13 was 9,40,260 tonnes where West Bengal had highest share (25.66%) followed by Uttar Pradesh (19.50%) (APEDA, 2012-13).But, it has been seen that this sector is highly been effected due to high incidence of different diseases (Roy *et al.*, 2015). Thambore and Sinha (2009) had reported that total losses due to diseases have been found to be Rs. 945 in goat. Morbidity and mortality losses due to peste des petits ruminants (PPR) only were calculated to be about Rs. 301 and Rs. 2,558 per goat respectively (Roy *et al.*, 2015).It has been further observed that the main limitations to effective livestock health management are an inadequate focus on preventive measures, lack of medicines and equipment in rural veterinary clinics and ignorance among the farmers (Dey*et al.*, 2007). We know that knowledge is power; similarly, better you know better you do. But, NSSO (2005) had revealed that only 5.1% of the farmer households in India are able to access any information on animal husbandry against 40.4% of the Indian households accessing information on modern technologies for crop farming. Therefore, a study had been taken up to assess the factors effecting knowledge and adoption level of goat owners in healthcare management practices in India.

*Corresponding author: rakeshvetext@gmail.com

Materials and Methods

The study was purposively selected in West Bengal (WB) and Uttar Pradesh (UP) on the basis of high goat populated state in the country. North 24 Parganas district from WB and Mathura district from UP were randomly selected for the study. Again, two blocks each were randomly selected from these districts and 45 farmers were randomly selected from each block for data collection, thus 90 farmers were selected from each state and 180 respondents form the total sample size of the study. Data were collected through semi structured interview schedule. The knowledge level was measured using nine questions related to goat healthcare management. Every right answer was given a score of 1 and the total obtainable score was calculated.The adoption level of the respondents was measured by making use of adoption index developed by Karthikeyan (1994).Adoption index was measured in 3-point continuum i.e., full adopter (FA) = 3, partial adopter (PA) = 2 and non-adopter (NA) = 1. Adoption index was calculated from mean score obtained divided by maximum obtainable score multiplied by 100. (i.e., Adoption index = Mean score obtained X 100 / Maximum obtainable score). Categorization into non-adopter (<33.33), partial adopter (33.34-66.66) and full adopter (>66.66) were done on the basis of adoption index. Various independent variables (13) were used to predict the knowledge level and various independent variables (14) were used to predict the adoption level using multiple linear regression model. For interpretation of data; analysis such percentage,'t' test, correlation and regression were done using SPSS 18 package.

Results and Discussion

Knowledge and extent of adoption

Table 1 and 2 depict that all the respondents had knowledge of providing clean drinking else their animals might get ill. But, it was fully adopted by 51.67 percent and partially adopted by rest of the respondents.

Knowledge of immediate care of the sick animal in certain diseases was found among majority (89.44%) of the respondents. But, immediate care of sick animals was fully adopted by 33.33% of the respondents while 30 percent were PA to this practice.

Veterinary doctors' need to be consulted immediately at the time of sick was known to majority (77.22%) of the respondents. But, only 17.78 percent of the respondents had fully adopted this practice. Majority (53.89%) of the respondents were PA followed by 28.33 percent was NA in consulting veterinarian immediately at the time of sick. The NA reported that they used to treat their animals by local healers or by themselves using indigenous technology. Sagar *et al.* (2013) also reported that majority of the farmers use to treat their animals by local healers while only 40% of the farmers were found to treat their animals by veterinarian in Tamil Nadu. Keeping sick animals in clean and dry places was known to majority (61.11%) of the respondents. But, only 37.78 percent were found FA and 12.78 percent were found PA to this practice. NA to this practice was about half of the total respondents. Knowledge of trimming of hoof at least twice a year was known to 45 percent of the respondents. But, FA and PA to this practice was 26.11 percent and 12.78 percent of the respondents respectively. NA to this practice was about 61.11% of the respondents. However, 52.22 percent of the respondents in UP had fully adopted this practice but none had fully adopted trimming hoof at least twice a year in WB.

Knowledge of personal hygiene which needs to be maintained by the rearer otherwise zoonotic diseases may get transmitted was known to 37.78 percent of the respondents. But, only 10 percent and 11.11 percent of the respondents were FA and PA respectively in this practice while majority (78.89%) respondents were NA to this practice. Non-adoption to this practice might be due to lack of knowledge. Kumar *et al.* (2014) had nearly similar findings in their study. Knowledge of regular deworming was found in only among 23.33 percent of the respondents. But, only 9.44 percent and 5.56 percent of the respondents were found to be FA and PA respectively to this practice. Rest 85.00 percent of the respondents were NA to this practice. Higher numbers of FA in this practice were found in WB (13.33%) than UP (5.56%), but PA was found higher in UP (7.78%) than WB (3.33%). This might be due to lack of knowledge or might be due to the fact that non-adoption of this practice does not have immediate consequences. Rashmi (2010) and Deshpande *et al.* (2009) also had reported similar finding in their study.

Table 1. Distribution of the respondents according to knowledge on goat healthcare management practices

Sl. No.	Practices	WB (n= 90)	UP (n= 90)	Total (N=180)
1.	Personal hygiene	21(23.33)	17 (18.89)	68 (37.78)
2.	First aid care	22(24.44)	7 (7.78)	29 (16.11)
3.	Providing supportive healthcare	22(24.44)	7 (7.78)	29 (16.11)
4.	Keeping sick in dry and clean place	47(52.22)	63 (70.00)	100 (61.11)
5.	Providing clean drinking water	90 (100)	90 (100)	180 (100)
6.	Regular deworming	26(28.89)	16 (17.78)	42(23.33)
7.	Trimming of hoof at least twice a year	9(10.00)	72 (80.00)	61 (45.00)
8.	Immediate care of sick animals	75(83.33)	86 (95.56)	161 (89.44)
9.	Consult veterinary doctors immediately when sick	66(73.33)	73 (81.11)	139(77.22)

Figures in parenthesis indicate percentage

Table 2. Distribution of the respondents on the basis of extent of adoption

Sl. No.	Practices	WB (n= 90)			UP (n= 90)			Total (N=180)		
		FA	PA	NA	FA	PA	NA	FA	PA	NA
1.	Personal hygiene	7 (7.78)	14 (15.56)	69 (76.67)	11 (12.22)	6 (6.67)	73 (81.11)	18 (10.00)	20 (11.11)	142 (78.89)
2.	First aid care	19 (21.11)	2 (2.22)	69 (76.67)	5 (5.56)	2 (2.22)	83 (92.22)	24 (13.33)	4 (2.22)	152 (84.44)
3.	Providing supportive healthcare	19 (21.11)	2 (2.22)	69 (76.67)	5 (5.56)	2 (2.22)	83 (92.22)	24 (13.33)	4 (2.22)	152 (84.44)
4.	Keeping sick in dry and clean place	36 (40.00)	5 (5.56)	49 (54.44)	32 (35.56)	18 (20.00)	40 (44.44)	68 (37.78)	23 (12.78)	89 (49.44)
5.	Providing clean drinking water	26 (28.89)	64 (71.11)	00	67 (74.44)	23 (25.56)	00	93 (51.67)	87 (48.33)	00
6.	Regular deworming	12 (13.33)	3 (3.33)	75 (83.33)	5 (5.56)	7 (7.78)	78 (86.67)	17 (9.44)	10 (5.56)	153 (85.00)
7.	Trimming of hoof at least twice a year	00	9 (10.00)	81 (90.00)	47 (52.22)	14 (15.56)	29 (32.22)	47 (26.11)	23 (12.78)	110 (61.11)
8.	Immediate care of sick animals	32 (35.56)	31 (34.44)	27 (30.00)	28 (31.11)	35 (38.89)	27 (30.00)	60 (33.33)	54 (30.00)	74 (41.11)
9.	Consult veterinary doctors immediately when sick	17 (18.89)	49 (54.44)	24 (26.67)	15 (16.67)	48 (53.33)	27 (30.00)	32 (17.78)	97 (53.89)	51 (28.33)

FA= Full adopter, PA= Partial adopter, NA= Non adopter; Figures in parenthesis indicate percentage

Only 16 percent of the respondents were found having knowledge on first aid care as well as providing supportive healthcare similarly first aid care as well as providing supportive healthcare was fully and partially adopted by only 13.33 percent and 2.22 percent of the respondents respectively. NA to these practices was about 84.44 percent of the respondents.

Level of knowledge and adoption

Mean knowledge level of the respondents in healthcare management practices was medium

(i.e., 4.19) on nine-point score. Mean knowledge level in health management practices was nearly same in WB (4.20) and UP (4.18). The result also shows that majority of the pooled respondents had medium (61.11%) followed by low (34.44%) and high (l4.44%) level of knowledge (Table 3). The 't test analysis reveals that there was no significant difference between two states with respect knowledge level in healthcare management practices in goat farming.

The mean adoption index of the respondents from nine packages of practices on healthcare management was medium (i.e., 34.60), while it was 32.56 in WB and 36.63 in UP(Table 3). The result also shows that majority of the respondents are NA (55%) followed by PA (42.78%) and FA (2.22%) in healthcare management practices. Kumar *et al.* (2014) reported that majority of the respondents belong to medium adopter category in their study in Uttar Pradesh. The 't' test analysis reveals that there was no significant difference between two states with respect adoption level in healthcare management practices in goat farming.

Table 3. Level of knowledge and adoption among goat owners in healthcare management practices[*]

Categories	WB (n=90)		UP (n= 90)		Total(N=180)	
	Knowledge level	Adoption level	Knowledge level	Adoption level	Knowledge level	Adoption level
Non-adopter (<33.33)	35 (38.89)	54 (60.00)	27 (30.00)	45 (50.00)	62 (34.44)	99 (55.00)
Partial adopter (33.34-66.66)	47 (52.22)	33 (36.76)	63 (70.00)	44 (48.89)	110(61.11)	77(42.78)
Full adopter (>66.67)	8 (8.89)	3 (3.33)	00	1(1.11)	08 (4.44)	4 (2.22)
Mean ± SD	4.20 ±1.69	32.56±17.65	4.18 ±0.99	36.63±14.7	4.19±1.38	34.60±16.05

*Figures in parenthesis indicate percentage

Table 4. Pearson's correlation coefficient of farmers' knowledge level on goat healthcare management with selected variables

Sl. No.	Independent Variables	West Bengal	Uttar Pradesh	Total
1.	Age	0.027	-0.033	0.006
2.	Family size	-0.059	0.015	-0.012
3.	Education	0.663**	0.201	0.503**
4.	Family education status	0.111	0.111	0.097
5.	Land holding	0.255*	0.286**	0.205**
6.	Flock size	0.232*	-0.104	0.049
7.	Farming experience	0.175	-0.062	0.041
8.	Income in goat farming	0.242*	0.221	0.224
9.	Annual family income	0.135	0.026	0.050
10.	Mass media	0.721**	0.295**	0.606**
11.	Formal interpersonal	0.763**	0.414**	0.589**
12.	Informal interpersonal	0.021	0.163	0.075
13.	Social participation	0.657**	0.403**	0.569**

**p<01, *p<0.05

Table 5. Pearson's correlation coefficient of farmers' adoption level with selected variables

Sl. No.	Independent Variables	West Bengal	Uttar Prodesh	Total
1	Age	0.035	0.001	0.024
2	Family size	-0.185	-0.044	-0.017
3	Education	0.606**	0.230*	0.414**
4	FES	0.115	0.088	0.030
5	Land holding	0.244*	0.257*	0.243**
6	Flock size	0.220*	0.010	0.014
7	Farming experience	0.192	0.001	0.108
8	Income in goat farming	0.252*	0.059	0.141
9	Annual family income	0.094	0.006	0.069
10	Knowledge level	0.912**	0.827**	0.868**
11	Mass media	0.782**	0.362**	0.593**
12	Formal interpersonal	0.831**	0.468**	0.600**
13	Informal interpersonal	-0.065	0.029	0.008
14	Social participation	0.708**	0.421**	0.569**

**p<01, *p<0.05

Relationship of different factors with knowledge and adoption

Table 4 revealed that the socio-economic characteristics and communication variables such as education (p<0.01), land holding (p<0.01), mass media exposure (p<0.01), formal interpersonal contact (p<0.01) and social participation (p<0.01) had significant and positive association with knowledge level on healthcare management practices. However education (p<0.01), land holding (p<0.05), flock size (p<0.05), income in goat farming (p<0.05), mass media exposure (p<0.01), formal interpersonal contact (p<0.01) and social participation (p<0.01) had significant and positive association with knowledge level in healthcare management practices in WB whereas land holding (p<0.01), mass media exposure (p<0.01), formal interpersonal contact (p<0.01) and social participation (p<0.01) had significant and positive association with knowledge level in healthcare management practices in UP.

Table 5 depicts that the socio economic and communication variables such as education (p<0.01), land holding (p<0.01), knowledge level (p<0.01), mass media exposure (p<0.01), formal interpersonal contact (p<0.01) and social participation (p<0.01) had significant and positive association with adoption index for healthcare management in overall respondents. However education (p<0.01), land holding (p<0.05), flock size (p<0.05), income in goat farming (p<0.05), knowledge level (p<0.01), mass media exposure (p<0.01), formal interpersonal contact (p<0.01) and social participation (p<0.01) had significant and positive association with adoption index for healthcare management practices in WB whereas education (p<0.05), land holding (p<0.05), knowledge level (p<0.01), mass media exposure (p<0.01), formal interpersonal contact (p<0.01) and social participation (p<0.01) had significant and positive association with adoption index for healthcare management practices in UP.

Table 6. Multiple regression of knowledge level with selected independent variables

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Beta	Std. Error	Beta		
(Constant)	2.512	0.270		9.318**	0.000
Mass media	0.585	0.067	0.511	8.752**	0.000
Education	0.106	0.020	0.317	5.396**	0.000
Informal interpersonal	0.116	0.040	0.155	2.876**	0.005
Land holding	0.020	0.006	0.167	3.099**	0.002
Flock size	0.005	0.002	0.124	2.257*	0.025

R^2=0.717; *p<0.05, **p<01.

Contributing factors to knowledge and adoption

Table 6 shows multiple regression of knowledge level in healthcare management with socio-economic and communication variables. The study reveals that mass media exposure, education, informal interpersonal contact, land holding and flock size were the main contributing factors to farmers' knowledge level in healthcare management. It may be concluded that farmers with higher mass media exposure, education, informal interpersonal contact, land holding and flock size were having more knowledge level in healthcare management. Here R^2 value is 0.717, meaning 71.7 percent of the variance in knowledge level in healthcare management practices is explained by mass media exposure, education, informal interpersonal contact, landholding and flock size.

Table 7 further shows multiple regression of adoption index on healthcare management practices with socio-economic and communication variables. The result depicts that knowledge level in healthcare management practices, formal interpersonal contact, flock size and farming experience were the main contributing factors to farmers' adoption index in healthcare management practices. It may be concluded that farmers having higher knowledge level, higher formal interpersonal contact, larger flock size and higher farming experience were having higher adoption level in healthcare management practices. Here R^2 value is 0.786, meaning 78.6 percent of the variance in adoption index on healthcare management practices is explained by knowledge level, formal interpersonal contact, flock size and experience in goat farming. Roy *et al.* (2017) have similar findings in knowledge and adoption of scientific kid health management among goat owners under field conditions.

Conclusion

The study has once again shown that higher the knowledge level higher is the level of adoption. It has further shown that mass media exposure, education, informal interpersonal contact, land holding and flock size were the main contributing factors to farmers' knowledge level in healthcare management practices. Similarly, knowledge level, formal interpersonal contact, flock size and farming experience were the main contributing factors in adoption of improved healthcare management practices. Therefore, a holistic extension approach for goat owners needs to be taken up considering all the factors which can enhance the knowledge level in improved healthcare management practices resulting in adoption of these improved practices so that they can prevent morbidity and mortality in their farm and thereby reduce economic losses.

Table 7. Multiple regression of adoption index on goat healthcare management with selected independent variables

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-8.050	2.018		-3.989**	0.000
Knowledge level	8.773	0.510	0.756	17.189**	0.000
Formal interpersonal	1.175	0.282	0.188	4.162**	0.000
Flock size	0.057	0.018	0.115	3.153**	0.002
Experience in goat farming	0.131	0.058	0.081	2.280*	0.024

R^2=0.786; **p<01, *p<0.05

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