Research Article

KNOWLEDGE AND PERCEPTION LEVEL OF DAIRY FARMER'S ON CLINICAL MASTITIS CONTROL MEASURES IN CUDDALORE DISTRICT OF TAMIL NADU

John Christy R and Kothandaraman S

Division of Animal Husbandry, Faculty of Agriculture Annamalai University
Annamalai Nagar-Pin 608002

ABSTRACT

Livestock in general and dairying in particular play a vital role in the Indian economy. Diseases and parasites are serious constraints affecting dairy cattle production. Mastitis, the inflammatory condition of the udder is considered as one of the most costly disease affecting dairy cows. For effective mastitis control, farmers' perceptions of disease risk, different control measures to practise and the inherent benefits associated with available disease control options are important criteria in adoption decisions. Therefore, this study was conducted with an objective to assess the farmers' knowledge and perceptions on clinical bovine mastitis control measures in the study area. Cuddalore District of Tamil Nadu was randomly selected for the present study. Multistage random sampling technique was used to select the respondents. In total, 120 farmer's having dairy cows were chosen again randomly. Relevant data were collected from the chosen respondents through personal interview using a pre-tested interview schedule. The results of the study showed that 100 per cent of the respondents knew that keeping Milkman's hands clean with clipped nails would prevent the occurrence of clinical mastitis whereas only few (4.1%) knew that the dry cow therapy, proper maintenance of milking machine and balanced nutrition indeed effectively control the clinical mastitis. The data showed that the level of education had positive correlation with the awareness level. The respondents who belonged to both backward class and most backward class knew more number of disease control measures than the respondents belonging to scheduled class. Livestock rearing experience had direct positive correlation with the awareness level. Attending livestock related training programme had profound positive effect on knowledge levels of respondents. To bridge the gap between the perception and reality, the planners should increase the awareness level of the farmer's to minimise the avoidable loss due to the mastitis. The awareness level can be improved by enhanced educational status of farmers, conducting more awareness programmes through mass Medias in prime time and conducting more number of livestock rearing and disease control training programmes at the village level.

INTRODUCTION

Livestock are a crucial source of financial capital for the rural poor. In fact, for rural farmer and often for poor women, livestock are the most important fungible asset they own and they provide a critical reserve against emergencies and decrease vulnerability to financial shocks from ill health, crop failures, and other risks. Keeping livestock may help meet people's consumption requirements not only by directly providing them with food, with fuel, with transport, or with hair or wool for clothing, but also by generating sales income that helps them to purchase these and other consumption goods and services (Dorward, *et al*., 2005). Livestock in general and dairying in particular play a vital role in the Indian economy.

Diseases and parasites are serious constraints affecting dairy cattle production and these diseases affect livestock production in various ways, such as reduced growth rate, milk production, fertility and value of hides and mortality, thus cause considerable economic losses to livestock keepers (Chenyambuga, *et al*., 2010). The impact of animal diseases are all likely to be proportionally greater for the poor because they are exposed to more animal disease risk and have less capacity to cope with that risk than those who are better-off. This combination (exposure to risk and lack of capacity) reduces yet further their chances of escaping poverty. Reducing the incidence of these diseases is therefore one of the priorities to be considered in order to feed the world and reduce poverty.

Corresponding author: **John Christy R**
Division of Animal Husbandry Faculty of Agriculture Annamalai University Annamalai Nagar-Pin 608002

Table 1 Household socio-economic characteristics of respondents (in numbers)

Details	Landless Farmers	Marginal Farmers	Small Farmers	Large Farmers	Overall
Number of Respondents	30	30	30	30	120
	(25)	(25)	(25)	(25)	(100)
Sex					
Male	25	15	20	28	88
	(20.8)	(12.5)	(16.7)	(23.3)	(73.3)
Female	05	15	10	02	32
	(4.2)	(12.5)	(8.3)	(1.7)	(26.7)
Average age in years	37.4	36.3	37.1	36.4	36.8
Level of education					
Primary school	5	09	05	01	20
	(4.2)	(7.5)	(4.2)	(0.8)	(16.7))
Secondary school and tertiary education	1	08	20	29	58
	(0.8)	(6.7)	(16.7)	(24.2)	(48.3)
Illiterate	25	12	05	0	42
	(20.8)	(10)	(4.2)	(0)	(35)
Average family size	6.3	5.8	4.3	3.6	5.0
Community					
Forward Community	0	0	0	0	0
Backward Community	1	3	10	15	29
	(0.8)	(2.5)	(8.3)	(12.5)	(24.2)
Most Backward	4	7	15	13	39
Community	(3.3)	(5.8)	(12.5)	(10.8)	(32.5)
Scheduled caste Community	25	20	5	2	52
	(20.8)	(16.7)	(4.2)	(1.7)	(43.3)
Average Household income/year					
upto Rs.40000/-	27	16	5	0	48
	(22.5)	(13.3)	(4.5)	(0)	(40)
Rs.40001-80000/-	2	10	10	2	24
	(1.7)	(8.3)	(8.3)	(1.7)	(20.0)
Rs.80001-120000/-	0	4	10	20	34
	(0)	(3.3)	(8.3)	(16.7)	(28.3)
Rs.120001 &above	0	1	05	08	14
	(0)	(0.8)	(4.2)	(6.7)	(11.7)
Livestock keeping experience					
Less than 5 years	2	5	0	2	9
	(1.7)	(4.2)	(0)	(1.7)	(7.5)
More than 5years	28	25	30	28	111
	(23.3)	(20.8)	(25)	(23.3)	(92.5)
Herd size					
1 - 2	30	10	5	02	47
	(25)	(8.3)	(4.5)	(1.7)	(39.2)
3 – 10	0	20	22	20	62
	(0)	(16.7)	(18.3)	(16.7)	(51.7)
More than 10	0	0	03	08	11
	(0)	(0)	(2.5)	(6.7)	(9.2)

Figures in the parentheses indicate percentages to total.

Over the past 125 years, mastitis has been one of the most studied conditions of dairy cows. This is confirmed by a search of peer-reviewed literature covering this period, which revealed more than 12,000 papers. Yet mastitis is still one of the most relevant and problematic diseases to treat and control in practice, which is testament to the complexity and mutability of the condition. Mastitis is the inflammatory condition of the udder and characterized by physical, chemical and microbiological changes in the milk and pathological changes in the glandular tissues of the udder. It is considered as one of the most costly disease affecting dairy cows. Reviews of past calculations of the economic losses of clinical mastitis (Schepers and Dijkhuizen, 1991; Halasa *et al*. 2007) clearly show that mastitis has a great economic impact. The costs categories include: milk production losses, drugs, discarded milk, veterinarian, labour, milk quality, culling and occurrence of other diseases (Gill *et al*. 1990; Schepers and Dijkhuizen, 1991; Halasa *et al*. 2007).

A farmer who knows that mastitis causes production inefficiencies and extra additional costs can be motivated to act on mastitis prevention (Valeeva *et al*., 2007). Decisions are often based on the farmer's perception and knowledge level on the economic losses due to mastitis and control measures of mastitis. Perception refers to what a farmer thinks as correct. For effective mastitis control, farmers' perceptions of disease risk, different control measures to practise and the inherent benefits associated with available disease control options are important criteria in adoption decisions. Therefore, this study was conducted with an objective to assess the farmers' knowledge and perceptions on clinical bovine mastitis control measures in the study area.

METHODOLOGY

Cuddalore District of Tamil Nadu was randomly selected for the present study. Multistage random sampling technique was used to select the respondents.

Table 2 Knowledge level of respondents on clinical mastitis control measures (in numbers)

S. No	Control Measures	Respondents awareness	
		Aware	Not aware
1	Improving cleanliness of cows' surroundings, especially in late dry period and at calving	92 (76.6)	28 (23.4)
2	Pre and post milking teat dipping with a germicidal dip (germ killing)	22 (18.3)	98 (81.7)
3	Milking clean, dry teats	74 (61.6)	46 (38.4)
4	Treating all quarters of all cows at drying off with antibiotic products specifically designed for dry cow therapy.	5 (4.1)	115 (95.9)
5	Culling chronic mastitis cows	65 (54.2)	55 (45.8)
6	Preventing cow from accessing manure, mud, or pools of stagnant water	72 (60.0)	48 (40.0)
7	Maintaining and operating milking machines properly	5 (4.1)	115 (95.9)
8	Feeding proper balanced nutrition with adequate levels of vitamin E and selenium	5 (4.1)	115 (95.9)
9	Providing clean and dry bedding	72 (60.0)	48 (40.0)
10	Keeping Milkman's hands clean and nails clipped	120 (100.0)	0 (0)
11	Isolation of infected animal from the herd	75 (62.5)	45 (37.5)
12	Milking at same time and after stimulation	100 (83.3)	20 (16.7)
13	Keeping cows standing after milking	5 (4.1)	115 (95.9)
14	Attending/milking healthy animals first	72 (60.0)	48 (40.0)

Figures in the parentheses indicate percentages to total.

The selected district comprised 13 blocks of which, two blocks, viz., Kurnchipadi and Panruti were randomly selected. In the next stage, two villages from each selected block were chosen randomly. In total, 120 farmer's having dairy cows were chosen again randomly from the selected four villages, 30 from each village, and it was ensured that the sample represented all the land holding class categories. The study was taken up during the months of April and May, 2016 and the data collected from the sample units related to the year 2015-2016. Relevant data were collected from the chosen respondents through personal interview using a pre-tested interview schedule. Cross checks were made to minimise the errors due to recall bias and also to ensure reliability of the information provided by the respondents.

For the present study the sample households were classified into 4 categories based on their land holdings viz., landless labourers, marginal farmer's (below 2.5 acres), small farmer's (2.5 to 5 acres) and large farmer's (above 5 acres). Age was operationalised as the number of years completed by the respondent at the time of enquiry. Educational status was operationalised as the extent of formal education possessed by the respondents. Farm size was operationalised as the number of acres of land possessed / cultivated. Number of animals in the farm was operationalised as standard animal units (John Christy R., and Thirunavukkarasu.M, 2002). The association between the socio-economic characteristics of respondents and the extent of their knowledge and perception on control measures of clinical mastitis were analysed by the conventional analysis in the form of averages and per centages.

FINDINGS AND DISCUSSION

Out of the 120 respondents interviewed, 73.3 per cent were males and 26.7 per cent were females. Average age of respondents was found to be 36.8 years with no significant difference among different landholding categories. Majority of the respondents had formal education (65 %) and only 35 per cent were illiterates. Average family size was five. Major portion of the respondents belonged to scheduled caste (43.3%) community followed by most backward class (32.5%) and backward class (24.2%). Interestingly, none of the respondent belonged to forward class. Around 40 per cent of respondent's annual household income was found as less than Rs.40000 where as 11.7 per cent of respondents had more than Rs.1, 20,000/annum household income and the remaining (48.3%) fell in between these two classes. Vast majority of the respondents (92.5%) possessed more than five years of animal rearing experience. Among the respondents, 39.2 per cent owned less than two dairy animals, 51.7 per cent owned three to ten animals and 9.2 per cent owned more than 10 animals.

Most important fourteen clinical mastitis control measures and the knowledge level of the respondents are presented in the Table-2. All the respondents knew that keeping Milkman's hands clean with clipped nails would prevent the occurrence of clinical mastitis whereas only few (4.1%) knew that the dry cow therapy, proper maintenance of milking machine and balanced nutrition indeed effectively control the clinical mastitis. This can be explained with the fact that only less than 5 per cent of respondents attended atleast one animal rearing related training programme.

Table 3 Knowledge level of respondents on clinical mastitis control measures and socio-economic characters

Details	Knowledge level			
	Less than 5 control measures	6 to 10 control measures	11-14 control measures	Overall
Number of Respondents	42 (35)	73 (60.8)	5 (4.2)	120 (100)
Sex				
Male	24 (20)	60 (50)	4 (3.3)	88 (73.3)
Female	18 (15)	13 (10.9)	1 (0.8)	32 (26.7)
Level of education				
Primary school	02 (1.7)	18 (15.0)	0 (0)	20 (16.6)
Secondary school and tertiary education	0 (0)	52 (43.3)	06 (5.0)	58 (48.3)
Illiterate	40 (33.3)	02 (1.7)	0 (0)	42 (35)
Community				
Forward Community	0	0	0	0
Backward Community	3 (2.5)	24 (20)	2 (1.7)	29 (24.2)
Most Backward Community	2 (1.7)	35 (29.1)	2 (1.7)	39 (32.5)
Scheduled caste Community	37 (30.8)	14 (11.7)	1 (0.8)	52 (43.3)
Average Household income/year				
upto Rs.40000/-	41 (34.2)	7 (5.8)	0 (0)	48 (40)
Rs.40001-80000/-	1 (0.8)	23 (19.2)	0 (0)	24 (20)
Rs.80001-120000/-	0 (0)	33 (27.5)	01 (0.8)	34 (28.3)
Rs.120001 &above	0 (0)	10 (8.4)	04 (3.3)	14 (11.7)
Livestock keeping experience				
Less than 5 years	9 (7.5)	0 (0)	0 (0)	9 (7.5)
More than 5years	33 (27.5)	73 (60.8)	5 (4.2)	111 (92.5)
Herd size				
1 - 2	42 (35)	5 (4.2)	0 (0)	47 (39.2)
3 – 10	0 (0)	61 (50.8)	01 (0.8)	62 (51.6)
More than 10	0 (0)	7 (5.9)	04 (3.3)	11 (9.2)
Training experience				
Attended at least one	0 (0)	0 (0)	5 (4.2)	5 (4.2)
Nil	42 (35)	73 (60.8)	0 (0)	115 (95.8)

Figures in the parentheses indicate percentages to total.

Still, more than 60 per cent of respondents expressed their awareness on majority of control measures (Table -3), as mastitis is a very common and economically significant disease. Knowledge level of respondents on clinical mastitis control measures along with socio-economic parameters are presented in the Table-3. Around 53 per cent of total respondents, who are males, expressed knowledge on many of the disease control measures where as only around 12 per cent of total respondents, who are females, expressed knowledge on many of the disease control measures. It can be explained with the fact that roughly only 25 per cent of respondents were females. The data showed that the level of education had positive correlation with the awareness level. Almost all the respondents who had no formal education knew very few disease control measures.

The respondents who belonged to both backward class and most backward class knew more number of disease control measures than the respondents belonging to scheduled class. Livestock rearing experience had direct positive correlation with the awareness level. More than 93 per cent of the respondents who exhibited higher awareness level possessed more than five years of livestock rearing experience. Likewise annual household income and herd size also found to have positive influence on knowledge level. Attending livestock related training programme had profound positive effect on knowledge levels of respondents. All the respondents attended at least one animal rearing training programme expressed knowledge on all the fourteen clinical mastitis control measures studied which underlines the importance of imparting scientific training to livestock keepers.

CONCLUSION

A farmer who knows that mastitis causes production inefficiencies and extra additional costs can be motivated to act on mastitis prevention, even if his farm is not even near the penalty level (Valeeva *et al.* 2007). Decisions are often based on the farmer's perception of the economic losses due to mastitis. Perception refers to what a farmer thinks the economic losses of mastitis are on his farm. The farmer's perception can deviate from the real situation. To bridge the gap between the perception and reality, the planners should increase the awareness level of the farmer's to minimise the avoidable loss due to the mastitis. The awareness level can be improved by enhanced educational status of farmers, conducting more awareness programmes through mass medias in prime time and conducting more number of livestock rearing and disease control training programmes at the village level.

References

Chenyambuga, S.W., C.Waiswa, M.Saimo, P.Ngumi and P.S.Gwakisa, 2010. Knowledge and perceptions of traditional livestock keepers on tick-borne diseases and sero-prevalence of *Theileria parva* around Lake Victoria Basin. *Livestock Research for Rural Development* 22: 7.

Dorward, A., S.Anderson, Y.Nava, J.Pattison, R.Paz, J.Rushton and E.Sanchez Vera, 2005. A guide to indicators and methods for assessing the contribution of livestock keeping to the livelihoods of the poor. Department of Agricultural Sciences, Imperial College, London.

Gill, R., W.H.Howard, K.E. Leslie and K. Lissemore, 1990. Economics of mastitis control. *Journal of Dairy Science.*, 73 : 3340-3348.

Halasa, TH, K.Huijps, O.Osterås and H.Hogeveen, 2007. Economic effects of bovine mastitis and mastitis management: A review. Veterinary Quarterly., 29: 18-31.

John Christy, R and M.Thirunavukkarasu, 2002. "Socio-Economic Dimensions of Female Participation in Livestock Rearing: A Case Study in Tamil Nadu". *Indian Journal of Agricultural Economics.,* 57: 99 -103.

Schepers, J.A and A.A.Dijkhuizen, 1991. The economics of mastitis and mastitis control in dairy cattle - a critical analysis of estimates published since 1970. *Preventive Veterinary Medicine.,* 10: 213-224.

Subbarama Naidu, A and N.Kondaiah, 2004. Livestock production and post production systems-Need for a pragmatic approach. *Ind. Jour. Agril. Mktg* (Conf. Spl.)., 18: 91-105.

Valeeva, N.I., T.J.G.M.Lam and H.Hogeveen, 2007. Motivation of dairy farmer's to improve mastitis management. *Journal of Dairy Science.,* 90: 4466-4477.

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