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Awareness of scientific managerial practices for prevalence of Mastitis in un-organized dairies in Jaipur region of Rajasthan

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Abstract

The present study was focused on the managerial aspects of mastitis in the milch animals which plays a major role in milk quality and production performance of milch animals. Mastitis is a bacterial disease caused by a range of microbes, physical and chemical reason, etc. spread and caused disease mostly due to im proper care and in adequate management of milch animals. The study was conducted across the five districts of Jaipur region in Rajasthan with sample sizes of 50 un-organized dairy farms including both cattle and buffaloes. The results indicated that the about 67-87% cross bred and exotic cows were found in subclinical mastitis, in this condition the animals were affected by the disease but signs were not visible while about 33-63% cross bred and exotic cows of these farms found suffering from clinical mastitis. However in Indigenous cows about 31-51% were suffering from Sub clinical mastitis and 25-34% by clinical mastitis. In case of buffaloes sub clinical mastitis found in 17-29% and only 12-14% reported to be suffered by clinical mastitis. The higher presence of sub clinical mastitis was due to the poor managerial practices against the recommended scientific practices such as cleaning, washing and soaking of udder etc. It was recorded that no dairy owner was following the 100% established standard managerial practices in the study area. It is concluded that mastitis was the major managerial issue rather than a disease which was found in 33-87% in milking cows and 12-29% in milking buffaloes.

Keywords: Mastitis, sub-clinical mastitis, clinical mastitis, chronic mastitis, risk factor

Introduction

Mastitis, the most devastating disease of dairy animals causes huge economic losses to the dairy industry and is a challenge to veterinarians worldwide depending upon the climatic conditions, animal species and animal husbandry management practices. One study reported high incidence

of subclinical mastitis ranging from 20-80% in cows and 45% in buffaloes and over all prevalence of sub clinical mastitis in India thus ranging from 25-97%, with the average prevalence about 50% (Sharma *et al.*, 2007) [8]. As per Sharma *et al.*, (2007) [8] due to mastitis economic losses increase 114 folds since 1962 to 2001. However, Dua (2001) [14] reported losses of Rs 6053.21 with 4365.32 crore (70-80%) by subclinical mastitis. The estimated loss following by clinical mastitis is almost 700Kg in first lactation and, 1200 kg for cows in second lactation (Wilson *et al.*, 2004) [12]. According to severity, duration, nature of exudate and primary cause mastitis can be classified into sub clinical, clinical and chronic forms, and degree of mastitis depends on nature of causative agents, immunological health and lactation state of the animal. Mastitis is characterized by physical, chemical and usually microbiological changes in milk and inside udder affecting production and keeping quality of milk (Samad 2008). Kumari *et al.*, (2018) [7, 11] reported that sub-clinical mastitis was 3-40 times more common than clinical mastitis. Thus, from the above facts about the severe effects of mastitis on the health, quality and production of milch animals, the present study was undertaken on various managerial aspects adopted by the dairy owners in the study area and an effort was made to assess the present situation and to advise the dairy owners to overcome with this devastating disease of managerial nature through scientific management practices.

Materials and Methods

The present study was conducted in Jaipur region of Rajasthan purposely due to presence of a large number of unorganized dairy farms in this region, a sample of 50 unorganized dairy farms with different herd size and species (having more than 20 animals) were randomly selected from important five selected districts situated in Jaipur region namely Alwar, Dausa, Jaipur, Sikar and Jhunjhunu to collect the primary information with respect to the awareness and management practices used to prevent mastitis in the study area.

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The information was collected by pretested interview schedule during the year 2017-18. The present study was focused on the adoption scenario of standard managerial practices on different aspect to prevention of mastitis in milch animals in unorganized dairy farms. During the study researcher has critically analyzed the collected data pertaining to nutritional status, Suckling of calves before and after milking, cleaning of utensils and milkers habits and hygiene status, cleaning & sanitization of cattle sheds and milking parlors, washing and soaking of udder and teats before and after milking methods, animals were kept in standing position at least for 30 minutes just after milking, status of vaccination, grooming and deworming in dairy farms.

Result and Discussion-

Prevalence of various forms of Mastitis in the area found in between 1% to 87% in its various forms (sub clinical, clinical and chronic mastitis). It is revealed from the Table-1a that of

total Indigenous Cows about 26 to 52% were affected by state of sub clinical mastitis. However, clinical mastitis was reported 25 to 34% and chronic mastitis found in 1-3%. In exotic and crossbred cows about 68 to 87% were affected by sub clinical mastitis, whereas clinical mastitis reported 33-69% and chronic mastitis about 1-4% in these breed of cows. However, in case of buffaloes 23% were suffering from sub clinical mastitis and 13% by clinical mastitis and only 3% buffaloes reported by chronic mastitis (Table-1b). Further, the study reveals that a large number of crossbred and exotic milch animals were affected by all types of mastitis as compared to indigenous cows. Where, as buffaloes reported to be less sensitive towards the all types of mastitis. Mastitis situation due to nutritional status –feed and feed compounding methods for milch animals plays a vital role for maintaining the immunity and overall health of the animals. The aforesaid issues also discussed by Kumari *et al* (2018)^[11] and Sharma *et al.*, (2007)^[8]

Table 1a: Scenario of Sub-clinical Mastitis and chronic mastitis in cattle of Jaipur region, Rajasthan

Scenario of Sub-clinical mastitis and chronic mastitis in cattle of Jaipur region, Rajasthan 2017-2018														
Districts	Indegeneous Cows							Cross bfred/Exotic cows						
	Sub-clinical		Clinical Mastitis			Chronic mastitis		Sub-clinical		Clinical Mastitis			Chronic mastitis	
	Total	Affected	%	Affected	%	Affected	%	Total	Affected	%	Affected	%	Affected	%
Alwar	73	38	52	25	34	2	3	221	192	87	108	49	9	4
Dausa	127	39	31	32	25	3	2	166	112	67	105	63	5	3
Jaipur	94	45	48	25	27	1	1	239	163	68	78	33	6	3
Jhunjhnu	117	31	26	32	27	2	2	263	192	73	108	41	5	2
Sikar	99	31	31	25	25	2	2	295	221	75	119	40	4	1
Region	510	184	36	139	27	10	2	1184	880	74	518	44	29	2

Table 1b: Buffaloes

Districts	Sub-clinical			Clinical Mastitis		Chronic mastitis	
	Total buffaloes	Affected	%	Affected	%	Affected	%
Alwar	77	22	29	11	14	2	3
Dausa	69	12	17	9	13	2	3
Jaipur	69	16	23	8	12	1	1
Jhunjhnu	15	4	27	2	13	1	7
Sikar	37	8	22	5	14	1	3
Region	267	62	23	35	13	7	3

The results presented in Table -2 showed that none of dairy owners followed the complete feeding patterns to their milch animals as per scientific managerial recommendations. It was further found that about 18% dairy owners partially fulfilling the recommended nutritional requirements to their animals and a large number of dairy owners (60%) were not aware about scientific feeding patterns and supplied feed and fodder to their milch animals as per convenience and availability of

feed and fodder locally. Therefore, it was concluded that the poor nutritional practices adopted by the dairy owners in the study area was a significant reason that a large number of animals affected by the all types of mastitis. Suckling of calves naturally was also a vital factor to be reported for mastitis in this study. Importance of nutrition was also reported by Sharma, N. (2003)^[13].

Table 2: Nutritional status

Nutritional status 2017-2018									
District	Total DF	V. Good	Good	Average	Poor	% Nutritional Status			
						V. Good	Good	Average	Poor
Alwar	10	2	2	3	3	20	20	30	30
Dausa	10	1	2	2	5	10	20	20	50
Jaipur	10	2	3	3	2	20	30	30	20
Jhunjhnu	10	3	2	3	2	30	20	30	20
Sikar	10	1	2	2	5	10	20	20	50
Total	50	9	11	13	17	18	22	26	34

It was revealed from the Table-3 that suckling of calves after milking was a very common practice in these dairy farms. It was found that about 72% dairy owners following the suckling practices just after the completion of milking and only 12% dairy owners were allowing suckling to calves

before milking which helps in proper initiation and let down of milk too during milking process. Feeding calves after milking adversely affected the sphincter muscles strength of teat canal and causes loosening of muscles. However, 16% of the dairy owners rearing their calves separately. Thus it was

concluded that after milking suckling by calves was also a major cause to increase the chances of bacterial invasion inside mammary gland and reduces the timely and early own set of keratin plug at teat orifice. Cleaning of milking and related utensils like milk cane, milking machine parts etc. and milkers habits such as washing and soaking hands, timely trimming nails, smoking, spitting and awareness of proper milking methods etc. played the important role in protection from further infestation of mastitis. Among various reasons the same was observed and discussed by Ghosh *et al.*, (2003) [10].

It was observed from the Table-4 that only 16% dairy owners were taking precautions in maintaining good habits and hygienic standards before and during milking. It further revealed that 50% (34% Poor + 16% V. Poor) dairy owners were not serious on about maintaining hygienic, flies and mosquito free environment inside milk parlor and shed. Thus, a large number of milch animals were found affected by mastitis due to none adoption of hygienic and cleaning practices by dairy owners also mentioned by Kumari *et al.*, (2018) [1].

Table 3: Not allowed suckling of calves after milking if feeding calves naturally

Calves feeding status 2017-2018								
S. No.	District	Total DF	Before	After	Weaning	% Calves Suckling Status		
						Before	After	Weaning
1	Alwar	10	1	9	0	10	90	0
2	Dausa	10	2	8	0	20	80	0
3	Jaipur	10	0	2	8	0	20	80
4	Jhunjhnu	10	1	9	0	10	90	0
5	Sikar	10	2	8	0	20	80	0
	Total	50	6	36	8	12	72	16

Table 4: Only 16% dairy owners were taking precautions in maintaining good habits and hygienic standards before and during milking

Cleaning of utensils and milker's Hygiene status 2017-2018										
S. No.	District	Total DF	Good	Average	Poor	V. Poor	% of Cleaning and Milkers Status			
							Good	Average	Poor	V. Poor
1	Alwar	10	2	5	2	1	20	50	20	10
2	Dausa	10	0	4	4	2	0	40	40	20
3	Jaipur	10	3	1	5	1	30	10	50	10
4	Jhunjhnu	10	1	5	2	2	10	50	20	20
5	Sikar	10	2	2	4	2	20	20	40	20
	Total	50	8	17	17	8	16%	34	34%	16%

It was found that (Table 5) about 56% dairy owners in the region performed the cleaning practices at their sheds and parlors twice a day, whereas only 8% dairy owners followed the above practices as per scientific requirements and they

paying their attentions in keeping environment healthy and hygienic of their animal pens by using disinfectants and sanitizers etc. Chahar *et al.*, (2005) [10].

Table 5: About 58% dairy owners in the region performed the cleaning practices at their sheds and parlors twice a day, whereas only 8% dairy owners followed the above practices as per scientific requirements.

Cleaning status of sheds and milking parlors 2017-2018							% Status			
S. No.	District	Total DF	Once	Twice	Thrice	Immediately	Once	Twice	Thrice	Immediately
1	Alwar	10	1	7	1	1	10	70	10	10
2	Dausa	10	2	4	3	1	20	40	30	10
3	Jaipur	10	0	7	2	1	0	70	20	10
4	Jhunjhnu	10	1	6	2	1	10	60	20	10
5	Sikar	10	2	5	3	0	20	50	30	0
	Total	50	6	29	11	4	12%	58%	22	8%

It was revealed from Table-6 that only 4% dairy owners following the practice of cleaning of mammary gland (udder) after milking. Whereas all dairies followed the washing of udder before milking, but only 14% uses cloths for soaking of udders. It was recorded that about 86% dairy owners were washing udder only before milking. Only 14% dairy owners were aware about cleaning and soaking of udders after milking due to this careless managerial habits further facilitate the presence of moisture and remaining milk fractions at udder were provide breeding grounds to microbes at udder surface and causes mastitis. A very important scientific management practice is to keep the milch animals in standing position at-least about 30 minutes just completion of milking from protecting invasion of bacteria or microbes inside the teat canal due to unhygienic conditions at floorings area in sheds. If animal sit just after milking promote huge number of

environmental microbes enters via open teat orifice till the regeneration of Keratin Plug at teat orifice which is a natural protection device protect milch animal by invasion of microbes in side mammary glands. Kumari *et al.*, (2018) and Sharma *et al.*, (2007) [1, 8]

It was observed from the Table-7 that about 72% dairy owners just followed this practice only for 0-10 minutes and 22% dairy owners followed this practice near about 30 minutes without knowing the scientific reason behind it. Whereas knowingly allowing this practice near and above 30 minutes by offering nutritive feed to their animals were found only 6%. Therefore, the dairy owners of the study area were not having awareness about this scientific practice to keep their animals in healthy and hygienic state. Kumar *et al.*, (2009) [5]

Table 6: Only 4% dairy owners following the practice of cleaning of mammary gland (udder) after milking

Status of cleaning, washing and soaking of udder and teat before and after milking 2017-2018								
Cleaning, washing and soaking of udder and teat					Uses of cloths for soaking udder and teat			
Total DF	Before	After	Before%	After%	Before	After	Before%	After %
10	10	0	100	0	1	0	10	0
10	10	1	100	10	2	0	20	0
10	10	1	100	10	2	0	20	0
10	10	0	100	0	1	0	10	0
10	10	0	100	0	1	0	10	0
50	50	2	100	4%	7	0	14%	0

Table 7: About 72% dairy owners just followed this practice only for 0-10 minutes and 22% dairy owners followed this practice near about 30 minutes without knowing the scientific reason behind it

Kept animal for 30 min after milking 2017-2018			% Status			
Total DF	0-10 min.	Up to 30min.	With knowledge	%0-10 min.	%Up to 30min.	%With knowledge
			10	9	1	0
10	7	3	0	70	30	0
10	6	2	2	60	20	20
10	8	2	0	80	20	0
10	6	3	1	60	30	10
50	36	11	3	72%	22%	6%

Management practices such as vaccination, deworming, grooming and milking methods keeps animals healthy and immune against several infections and diseases. It was found from the Table-8 that about 64% dairy owners following the deworming practice quarterly and almost all dairy farms following the scheduled vaccinations against all serious diseases such as haemorrhagic septicaemia, black quarter, rinderpest, pox and foot and mouth disease etc. This was result of decent extension work done by department of animal husbandry in the State. However, it was recorded that only about 20% dairies following grooming practices to protect

their livestock free from ecto-parasites infestation. Swami *et al* (2017) [2]

Appraisal of the Table-9 showed that only 6% dairy owners having milking machine whereas 94% followed the hand milking as a routine milking practice at their farms and out of them 80% followed Knuckling methods which is scientifically incorrect way of milking the animals only 8% knowing the importance of full hand milking thus mostly found following knuckling, damages the internal teat cell structure of teat and muscles further promotes the mastitis. The same was observed and discussed by Ghosh *et al* (2003) [10].

Table 8: About 64% dairy owners following the deworming practice quarterly and almost all dairy farms following the scheduled vaccinations against all serious diseases such as haemorrhagic septicaemia, black quarter, rinderpest, pox and foot and mouth disease, etc.

Vaccination deworming and grooming status 2017-2018						% Status		
Total DF	Vaccination	Grooming	Deworming			Vaccination	Grooming	Deworming Quarterly
			Quarterly	Half yearly	Annually			
10	10	2	7	1	2	100	20	70
10	10	1	6	2	2	100	10	60
10	10	3	8	1	1	100	30	80
10	10	2	6	2	2	100	20	60
10	10	2	5	4	1	100	20	50
50	50	10	32	10	8	100%	20%	64%

Table 9: Milking methods

Milking methods adopted by dairy owners 2017-2018								
Total DF	Machine Milking	Hand Milking			Machine Milking	Hand Milking		
		Knuckling	Stripping	Full Hand Milking		Knuckling	Stripping	Full Hand Milking
	Methods adopted by Dairy Owners					%		
10	1	9	1	1	10	90	10	10
10	0	8	1	1	0	80	10	10
10	1	7	2	0	10	70	20	0
10	1	8	0	1	10	80	0	10
10	0	8	2	1	0	80	20	10
50	3	40	6	4	6	80	12	8

Conclusion

From the present investigation, it was concluded that prevalence of mastitis was higher in cattle especially in cross bred and exotic cows as compared to buffaloes. It was observed that due to a large number of dairy owners were not much conscious about the scientific managerial practices.

However few dairy owners in un-organized of study area found partially following the standard managerial practices such as balance nutrition, washing, cleaning, soaking of udder before and after milking, timely cleaning and washing of sheds and utensils and keeping milch animals at least for 30 minutes after milking etc. Although a large number of dairy

owners follow the vaccination and de-worming practice very particularly as per the standard recommendations. Therefore an effective extension campaign is required to create awareness about the requirement of proper hygienic and other preventive measures to minimize the most devastating disease mastitis.

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