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Research Article

KNOWLEDGE LEVEL OF DAIRY FARMERS ABOUT SCIENTIFIC CLEAN MILK PRODUCTION PRACTICES

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ABSTRACT

Dairying is an important occupation of rural farmers in India and knowledge of scientific clean milk production practices have great impact in this regard. To evaluate the knowledge of scientific Clean Milk Production (CMP) practices, a study was conducted on randomly selected 120 dairy farmers of Haryana using a structure and pretested interview schedule. Respondents were interviewed at their home /farm at the time of milking and it was found that more than half of the dairy farmers were females and the majority of farmers were literate with poor extension and mass media contacts. Study further revealed that the majority of respondents had medium level of knowledge across different scientific CMP practices followed by them like feeding (82.5%), housing practices (80%), milker's hygiene (70%) milking practices (51.67%) and animal health (45%).

Keywords: Clean milk production, Dairy farmers, Knowledge

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According to the 20th livestock census, India boast 125.34 million of milch animals (cows and buffaloes) keeping intact its numerous no position in world (BAHS, 2019). With record milk production of around 198.4 million tonnes and increasing its per-capita milk availability upto 407 grams per day in 2019-20 (Economic survey, 2020-21). However, Haryana known as the milk pail of India, with its milch animal asset of 1.70 lakhs cows and about 4.26 lakhs buffaloes produced 117.34 lakh tonnes of milk in 2019-20 turning Haryana second in country for per capita per day milk availability of 1087 grams.

In today's era, consumer awareness of milk quality, hygiene and sanitation makes clean milk production an essential aspect in dairying. As a result, in the milk value chain quality milk production and farmer awareness of scientific clean milk production practices are critical. Clean milk production can be defined as a milk from healthy milch animals with normal flavor, free from dirt and filth, containing permissible limit of bacteria and essentially free from pathogens, adulterants, different toxins, abnormal residues, pollutants and metabolites (Das, 2003). Despite the fact that India's most of the milk production comes from rural areas, the quality of the milk produced is poor owing to the farmer's lack of technical expertise for clean milk production (Ogale,1999). This necessitates to understand the farmer's knowledge for animal housing, milkers' hygiene, animal feeding, animal health, and animal milking and milking equipment procedures in order to procure clean milk. Hence, currenta study was performed to evaluate the knowledge level of farmers regarding scientific clean milk production (CMP) practices.

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MATERIAL AND METHODS

The study was conducted in Hisar district of Haryana state purposively selected for being largest producer of milk and owing maximum population of cattle and buffalo in Haryana. Using a multistage random sampling method, total 120 dairy farmers were sampled as respondents from two blocks i.e Hisar-I and Hisar-II from nine blocks, three villages from each block and twenty dairy farmers from a randomly selected village.

Clean milk can be defined as milk coming from a healthy milch animal obtaining normal flavor, free from dirt and filth containing permissible limit of bacteria and essentially free from pathogens, adulterants, different toxins, abnormal residues, pollutants and metabolites (Gupta, 2003; DAS, 2003). Data was collected through the pre-tested interview schedule consisting of various dimension and items therein for scientific clean milk production practices in multiple choice question format. Respondents were personally interviewed at the time and off the time of milking. Responses of the farmers were classified, coded, tabulated and categorized into low, medium and high level of knowledge using mean and standard deviation. Further, frequency, percentage and mean percent score (MPS) were worked out for analysis of different items in the respective dimensions of scientific clean milk production practices.

$$\text{Mean Percent Score (MPS)} = \frac{\text{Obtained score}}{\text{Maximum score}} \times 100$$

RESULTS AND DISCUSSION

The overall analysis of 120 farmers indicates that 57.5% were females and majority of farmers were young and middle aged with an average age of 41.97 years. Majority of farmers were illiterate, primary and middle (59.76%) level educated, small to medium family size (up to 6 members), low and medium level of income up to 5.5 lacs annually and nuclear family structure.

In general farmers had poor extension contact and mass media contact. Majority of farmers (75%) were not attended any training related to clean milk production practices. About just more than half of the total farmers had low to medium level of farming experience up to 16 years. Majority of farmers had low to medium level of herd size up to 6 animals. About 65% of farmers produced up to 16 liters of milk per day.

Overall knowledge level of farmers about scientific clean milk production practices

Study indicates that majority (75.83%) of respondents had medium level of knowledge while 10.83% and 13.34% had low and high levels of knowledge level (Table 1). Sharma *et al.* (2009), Akhter *et al.* (2013), Jacob and George (2013), Singh *et al.* (2013) and Deshmukh and Pagar (2014) all found similar results.

Knowledge level of farmers about animal housing practices

Majority of farmers (80%) had a medium level of understanding for animal housing practices (Table 1). Sharma *et al.* (2009) discovered similar results. According to Akhter *et al.* (2013), respondents knew 60.6% about home management. According to Kumar and Prakash (2017), 61.67% of farmers had a medium level of expertise. Khare *et al.* (2020) discovered similar findings.

Knowledge of farmers about Milker's hygiene practices

It was found that majority (70%) of farmers had medium level of knowledge about milker's hygiene practices (Table 1). Similar findings were observed by Singh *et al.* (2013). Deshmukh and Pagar (2014), Kumar and Prakash (2017).

Knowledge level of farmers about Animal Health Practices

It is critical to have a thorough understanding of animal immunization, major illnesses, and variables that influence disease incidence. According to the findings, 45% of farmers had a poor degree of understanding regarding animal health, while 43.33% had a medium level of knowledge. This might be due to a lack of information and awareness regarding animal vaccination and diseases (Table 1). Akhter *et al.* (2013) found a similar result, whereas Mali *et al.* (2014) discovered that the majority of dairy farmers knew everything about major dairy animal illnesses and signs of foot and mouth disease.

Knowledge level of farmers about the Animal Feeding Practices

Study found that majority (82.50%) of farmers had medium level of knowledge (Table 1). Similar findings were observed by Akhter *et al.* (2013), Singh *et al.* (2013), Prajapati *et al.* (2015), while Khare *et al.* (2020) and Singh *et al.* (2020) observed that majority of farmers had a partial level of knowledge about the feeding of animals.

Knowledge of farmers regarding Milking practices

For the production of clean milk, proper understanding of milking techniques is required. Almost half of the respondents (51.67%) had a medium level of understanding regarding clean milk production, while 21.67% of farmers had a poor level of knowledge (Table 1). Jacob and George (2013), Singh *et al.* (2013), Kumar *et al.* (2016), and Deshmukh and Pagar (2014) found similar results, while Mali *et al.* (2014) found that 100% of dairy farmers had complete knowledge of clean milk production, and Kumar and Prakash (2017) found that 80% of dairy farmers had medium knowledge of milking practices.

Knowledge of farmers regarding milking utensils and milk transportation

It was found that majority (61.67%) of farmers had medium level of knowledge regarding milking utensils and milk transportation. While 26.67% had low level of knowledge about milk transportation and milking utensils (Table 1). Similar findings observed by Kumar *et al.* (2016) and Kumar and Prakash (2017), while Deshmukh and Pagar (2014) observed that 79.69% farmers had poor knowledge about milking utensils and milk transportation.

Item wise knowledge level of farmers

The data concerning item-wise knowledge level of farmers regarding scientific clean milk production practices are presented in table 2.

Table 2 indicates that cent percent farmers knew practices like how many times cleaning of the shed in a week, what should done to maintain cleanliness of the animal shed, milker avoided coughing and sneezing at the time of milking, good milker's hygiene practices related to avoiding smoking during milking, the proper time to give concentrates to the milking animal, necessity of green fodder for animals advantages of vaccination, good animal management practice related to regular bathing and hair grooming, kept the animals standing for at least half an hour and stainless steel/aluminum milking utensils while

Table 1. Distribution of the farmers according to knowledge level of scientific clean milk production practices

Sr.No.	Category	Frequency (120)	Percentage
1	Overall knowledge		
	Low (up to 17)	13	10.83
	Medium (18-23)	91	75.83
	High (>23)	16	13.34
	Mean	20.04	
	SD	2.80	
2.	Knowledge level of housing practices		
	Low (below 2)	00	0.00
	Medium (2-3)	91	75.83
	High (>3)	29	24.16
	Mean	2.98	
	SD	0.72	
3	Knowledge level of milker's hygiene practices		
	Low (below 2)	00	0.00
	Medium (2-3)	70	58.33
	High (>3)	50	41.67
	Mean	3.26	
	SD	0.72	
4	Knowledge level of animal health related practices		
	Low (below 2)	33	27.50
	Medium (2-4)	69	57.50
	High (>4)	18	15.00
	Total	120	
	Mean	3.31	
	SD	1.11	
5	Knowledge level of feeding practices		
	Low (below 2)	00	0.00
	Medium (2-3)	95	79.16
	High (>3)	25	20.83
	Mean	2.89	
	SD	0.72	
6	Knowledge level of milking practices		
	Low (up to 2)	19	15.83
	Medium (3-4)	68	56.67
	High (>4)	33	27.50
	Mean	3.77	
	SD	1.15	
7	Knowledge level milking utensils and milk transportation practices		
	Low (up to 2)	11	9.17
	Medium (3-4)	76	63.33
	High (>4)	33	27.50
	Mean	3.84	
	SD	1.08	

95 percent of farmers knew about benefits of mineral mixture feeding, 90% of farmers knew about qualities of good animal house and 88.33% of farmers knew about the ideal time of milking method and precaution followed by milker at the time of milking. On other hand the farmers knew very few practices like disease is responsible for abortion in animals (39.16%), symptoms of tuberculosis in

Table 2. Item wise knowledge level of farmers regarding scientific clean milk production practices (N=120)

Sr.No.	Item wise knowledge level	Frequency	Percentage
	Animal housing practices		
1.	How many times were clean animal shed in a week	120	100
2.	What should be done to maintain cleanliness of the animal shed	120	100
3.	Qualities of good animal house	108	90
4.	Dung disposal facility	34	13.33
	Milker's hygiene practices		
5.	Precaution followed by milker at the time of milking	39	32.5
6.	Use of detergent and soap for washing and cleaning of hand	112	93.33
7.	avoid coughing and sneezing at the time of milking	120	100
8.	Avoid smoking during milking	120	100
	Animal feeding practices		
9.	Necessity of green fodder for animal	120	100
10.	Appropriate time to give concentrates to the milking animal	120	100
11.	Benefits of mineral mixture feeding	114	95
12.	Avoid dusty feed at the time of milking	54	45
	Animal health practices		
13.	Advantages of vaccination	120	100
14.	Disease responsible for abortion in animals	47	39.16
15.	External parasite in an animal shed	93	77.5
16.	Precautions followed after animal got diseased Animal is suffering from diseases then what should not be done	45	37.5
17.	Symptoms of tuberculosis in animals	10	8.33
18.	Dipping of teats after milking	14	11.67
19.	Animal management practice related to regular bathing and hair grooming	120	100
	Milking practices		
20.	Ideal manual method of milking	38	31.66
21.	Ideal time for complete milking	106	88.33
22.	Precautions followed after milking operation is over	106	88.33
23.	Removing few strips of milk before the start of milking operation	83	69.17
24.	Kept the animals standing for at least half an hour after milking	120	100
	Milking utensils and milk transport practices		
25.	Separation of diseased animal milk	22	18.33
26.	Stainless steel/aluminum milking utensils	120	100
27.	Wide open mouth utensils used for milking operation	82	68.33
28.	Separate vessels used for washing of teat, udder, milking utensils	19	15.83
29.	Used for washing and cleaning of milking utensils	22	18.33
30.	Cleanliness of milking vessels	100	83.33

animals (8.33%), dipping of teats after milking (11.67%), separation of diseased animal milk (18.33%) and separate vessels should use for washing of teat, udder, milking utensils (15.83%).

CONCLUSION

The overall analysis indicates that the majority (75.83%) of the farmers had medium level of overall knowledge regarding housing, milker's hygiene, feeding, animal health, milking practices, milking utensils and milk transport followed by the low and high level of knowledge. The maximum farmers (75.83%) had medium level of knowledge regarding housing practices and (41.67%) had high level of knowledge about milker's hygiene practices. The maximum farmers (about 80%) had low to medium level of knowledge about animal health while the majority (79.16%) of farmers had medium level of knowledge about feeding.56.67% had medium level of knowledge while 15.83% of farmers had low level of knowledge milking practices and majority (63.33%) of farmers had medium level of knowledge regarding milking utensils and milk transport.

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