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Analysis of Milking Management Practices Followed by Dairy Farmers of R. S. Pura Block in Jammu District

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Authors' contributions

This work was carried out in collaboration between all authors. Author RAB designed the study, performed the statistical analysis, wrote the protocol and first draft of the manuscript. Author RN guided the author RAB during whole research period and edited the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

The present study was conducted in R. S. Pura block of Jammu district to ascertain the milking management practices followed by dairy farmers. R. S. Pura block was purposively selected for the study. List of villages with maximum populations of milch animals was identified from the selected block. Out of the list of identified villages, two villages were randomly selected for the study. From each selected villages 20 dairy farmers were selected randomly, making a sample size of 40 farmers. The results of the study revealed that all 100 percent of dairy farmers practised hand method of milking and none of the dairy farmers practised machine milking. Majority 55 per cent and

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70 percent of respondents' practised full hand milking and wet hand milking habits respectively. Majority of respondents practised suckling of a calf to induce milk letdown. None of the respondents practised concentrate feeding along with massage of udder, and use of oxytocin injection for milk ejection in case of death of calf milk let down practices. Around 82.50% of farmers milking the animals at the same place of tethering in the byre. Most (67.50%) of the respondents milking the animal at dirty milking environment. All respondents (100%) followed two times milking, and a majority (67.5%) of them completed milking in 5-7 minutes. Majority of respondents did not practice straining of milk. The majority (77.5%) of respondents dried the animal by complete cessation of milking followed by intermittent milking. None of the respondents followed teat dipping after milking.

Keywords: Milking management; milking method; dairy farmer.

1. INTRODUCTION

Dairying is an integral part of Indian agriculture and Indian economy, more so, the rural-economy. India is known as the "Oyster of the global dairy industry" with opportunities galore to the entrepreneurs globally. India accounts for a significant share of world's livestock dairying resources with nearly 21.23% buffalo, 37.28 cattle, 26.40% goat and 12.71% Sheep. The number of milch animals (in-milk and dry) in cows and buffaloes has increased from 111.09 million to 118.59 million, an increase of 6.75% [1]. With an annual output of 146.7 million metric tonnes (2014-15) of milk, India is the largest milk producer in the world. India has also the largest milk producing animal population in the world. However the milk production per animal is less. Milk production is growing at the rate of 3.3% per annum while consumption is growing at 5%, leaving a gap between demand and supply. To cope this, government has started central scheme National Dairy Plan-phase-1(NDP) with NDDB as the nodal agency, for a period of 2011-2012 to 2016-2017 with total investment of about 2242 crores. The main objective of this scheme is to help provide rural milk producers with greater access to organized milk processing sector and thus to bridge the gap between demand and supply.

Indian dairy industry is facing the challenge of ensuring the quality of milk and milk products leading to low export of our dairy products due to traditional knowledge based livestock systems. Undoubtedly, dairy farming is an occupation (either main or subsidiary) of about 70 million families engaged in milk production in our country which is predominately the domain of landless laboureres, small and marginal farmers who generally keep 2-3 animals under mixed farming system, live in rural areas, having inadequate facilities/infrastructure at their disposal and access to services and markets [2]. Milk and milk products constitute a major share of the value of output from the livestock sector [3].

Milking management practices and quality of milk production plays an immense role in the improvement of marketing of milk and milk products in a particular area. Profitability of dairy industry and end product quality is closely related to the hygienic and chemical property of incoming raw milk. Milking is the key operation on a dairy farm having a direct effect on the income from the enterprise. It is an art requiring experience and skill. It should be conducted at regular intervals, quickly, cleanly, gently, quietly and completely. Cows remaining comfortable yield more milk. Maintenance of clean conditions in the milking area will ensure udder health and production of clean milk that remains wholesome for a long time. The withdrawal of milk should be completed in 5-7 minutes so that the milk is removed completely when the effect of hormone oxytocin is present. Complete milking should be practiced lest the residual milk may cause regression of secretary tissue thus reducing milk yield and also serve as a nidus for mastitis causing organisms. The milking area should be thoroughly washed and scrubbed after each milking so that the barn will be clean and dry before the next milking is commenced. In a developing country like India, where providing labour is a major social objective for any enterprise, where labour is relatively cheap, and where number of dairy animals reared per family is few, hand milking is practiced. Just before milking, the udder should be wiped with a cloth dipped and squeezed in some weak antiseptic solution. In cold weather, weak antiseptic should be used for the purpose. Apart from the cows and udders, the milkers, their hands and the milking pails and cans should be clean. The nails should be periodically trimmed and hands cleaned and disinfected between each milking by dipping in an antiseptic solution. Keeping this in

view a study was conducted in R. S. Pura block of Jammu to access the milking management practices followed by the dairy farmers.

2. MATERIALS AND METHODS

The present study was conducted in R. S. Pura block of Jammu district to access the milking management practices followed by the dairy farmers. Ex-post-facto research design was used in the present investigation; Karlinger (1973) opined that the ex-post-facto research design is worthy to be used, when the independent variables have already acted upon. Multistage random sampling technique was used to select the respondents. R. S. Pura block was purposively selected for the study. From the selected block, lists of villages with maximum populations of milch animals were identified. Out of the list of identified villages, two villages were randomly selected for the study. From each selected villages 20 dairy farmers were selected randomly, making a sample size of 40 farmers. The data were collected by personal interview method using structured interview schedules. The schedule was developed using different types of questions i.e. true / false and multiple choice. The data was coded, classified, tabulated and analyzed using the software; Statistical Package for the Social Science (SPSS 16.0). The presentation of data was done to give pertinent, valid and reliable answer to the specific objectives. Frequencies, percentage and mean were worked out for meaningful interpretation.

3. RESULTS AND DISCUSSION

General milking management practices followed by dairy farmers are presented in Table 1.

3.1 Method of Milking

Data of Table 1 shows that 100.00 per cent of dairy farmers practiced hand method of milking and none of dairy farmers practiced machine milking. As majority of the dairy farmers belongs to medium herd size (2-3 milch animals) and it will not be easier for the farmers to purchase milking machines due to high cost of milking machines. The findings were in agreement with the findings of Singh [4] who found that majority of respondents were milking their animals by themselves and most of them adopted full hand milking (92.22%). Similar findings were also observed by Patabandha et al. [5] in south Saurashtra region of Gujarat who conducted a study on milking practices of dairy farmers and observed that no farmer practiced machine milking.

3.2 Methods of Hand Milking

An analysis of Table 1 indicates that majority 55 percent of respondents practiced full hand milking method whereas very few 27.5 per cent respondents practiced knuckling method of milking followed by stripping method (12.5%). These results indicated that farmers were less aware about the scientific method of milking. Hence there is an urgent need to educate the farmers about the correct method of milking. The farmers still need more training and educated that knuckling is a wrong method of milking which may lead to teat injury and mastitis in long term. These findings were in agreement with Avinashilingam et al. [6], Rathore et al. [7] Kishore et al. [8], Patabandha et al. [5], Kumar et al. [9] and Sabapara et al. [10] who reported that most of the respondents were practicing full hand method of milking in their study which indicated good knowledge of scientific milking. While the findings were in contrast with the findings of Malik et al. [11] who carried a study on existing dairy farming Practices of farmers in Uttar Pradesh and reported that only few (24%) of respondents practiced full hand milking and majority of farmers practiced knuckling method of milking.

3.3 Milking Habit

A perusal of Table 1 reveals that majority 70 per cent of respondents practiced wet hand milking, whereas only 30 per cent of respondents practiced dry hand milking. These findings were in agreement with Patabandha et al. [5] and Sabapara et al. [10] who observed that most of the farmers practiced wet hand milking. The findings of result indicate that farmers were practicing traditional method of wet milking as having poor knowledge of scientific milking and, farmers must be aware about demerit of wet hand milking which affects the healthy udder.

3.4 Milk Let Down Practices

A careful look at Table 1 shows that majority 82.5 per cent of respondents practiced suckling of calf to induce milk letdown whereas, only 17.5 per cent of farmers practiced feeding along with massage of udder in case of death of calf. None

of the respondents practiced concentrate feeding along with massage of udder and use of oxytocin injection for milk ejection in case of death of calf for milk let down practices. The government ban on oxytocin injection for milk let down in case of death of calf practices was probable reason for not using oxytocin injection by the dairy farmers. Sabapara et al. [12] carried a study on milking management practices of dairy animals in tribal area of South Gujarat, India and reported that all the respondents allowed calves for suckle dam before milking for letdown of milk. Similary findings were also reported by Sathiadhas et al. [13].

3.5 Place of Milking and Milking Environment

A careful examination of Table 1 reveals that majority 82.50 percent of farmers milking the animals at the place of tethering in the byre whereas only 17.5 percent milking the animals at a different place. Most of the respondents 67.50 percent milking the animal at dirty milking environment. Very few 30 percent of respondents milking the animals at clean and wet milking environment followed by 7.5 of respondents milking the animals at clean and dry milking environment. The probable reason behind not adoption of hygiene of the animal shed might be due to used traditional cattle shed, lack of sufficient space, lack of proper drainage, ventilation facilities and lack of awareness about importance of hygiene of animal house for quality milk production. Similar findings were reported by Hossain et al. [14] and Sabapara et al. [12] who carried a study on milking management practices of dairy animals in tribal area of South Gujarat, India and observed that majority of farmers milked their dairy animals at the same place.

3.6 Frequency and Duration for Completion of Milking

Table 1 shows that all the respondents followed two times milking, owing to the practice of selling milk to primary village milk producers' co-operative society and local middle mans at morning and evening. A perusal of Table 1 also reveals that majority 67.5 percent of the respondents completed milking in 5-7 minutes where only 32.5 percent of the respondents completed milking more than 7 minutes. Milking should be completed within 7 minutes as oxytocin effect last for 5-7 minutes only. The findings also get support from the findings of Sabapara et al. [12] who reported that all the respondents tribal area of South Gujarat milked their animal twice in a day.

3.7 Straining of Milk

A careful look at Table 1 reveals that majority of respondents 82.5 did not practice straining of milk whereas only 12.5 per cent of farmers practiced straining of milk for removal of the dirt. For quality milk production straining of milk is must .Due to lack of cold storage facilities majority of respondents transfer the milk to processing unit immediately or to middleman dealers after milking without straining of milk. Similarly Surkar et al. [15] carried a study on adoption of quality milk production practices by dairy farmers in Wardha district of Maharashtra.

3.8 Method of Drying and Dry Period

An analysis of Table 1 shows that majority of farmers 77.5 percent dried the animal by complete cessation of milking followed (17.50%) by intermittent milking. Whereas only 5 percent of the respondents dried the animal by self drying. None of the dairy farmers practiced drying by intermittent milking. Drying off milking animals during advance stage of pregnancy preferably last two months before the commencement of next lactation is an important art of milking management, particularly for high yielding dairy animals. The present observations revealed that 82.5 and 17.5 per cent respondents adopted practice of drying off their dairy animals for more than two months and less two months time before calving, respectively. The findings are in agreement with the findings of Sabapara et al. [12] carried a study on milking management practices of dairy animals in tribal area of South Gujarat, India and observed that that 73.5 and 26.5 per cent respondents adopted practice of drying off their dairy animals for more than two months and two months/less time before calving, respectively

3.9 Teat Dipping and Testing for Mastitis Control

A careful look of Table 1 reveals that not a single respondent followed teat dipping after milking, though it is a good post milking practice to reduce the infection. This might be due to the

Table 1. General milking management practices adopted by dairy farmers

Milking management practices	Respondents (n=40)	
	Frequency	Percentage
1. Method of milking		
a. Hand method	40	100
b. Machine method	0	0
2. Methods of Hand milking		
a. Full hand milking	22	55
b. Milking by knuckling	11	`27.5`
c. Milking by stripping	5	12.5
d. Stripping at the end of milking	2	5
3. Milking habit		
a. Dry hand	12	30
b. Wet hand	28	70
4. Milk let down practices		
Suckling of calf to induce milk letdown	33	82.5
Concentrate feeding along with massage of udder	0	0
Suckling of calf along with conc. feeding and massage of udder	0	0
Conc. feeding along with massage of udder in case of death of calf	7	17.5
Use of oxytocin injection for milk ejection in case of death of calf	0	0
4. Place of milking		
1. Milking at the place of tethering in the byre	33	82.50
2. Milking animals at a different place	7	17.5
5. Milking environment		
1. Clean and dry	12	30
2. Clean and wet	27	67.50
3. Dirty	3	7.5
6. Milking Interval/Frequency of Milking		
Milking once per day	0	0
Milking twice per day	40	100
Milking thrice per day	0	0
Milking at regular interval	0	0
7. Duration for completion of milking		
Completion of milking in <5 minutes	0	0
Completion of milking in 5-7 minutes	31	77.5
Completion of milking in >7 minutes	9	22.5
8. Straining of milk		
Practiced	7	17.5
Not practiced	33	82.5
9. Method of Drying		
Drying by complete cessation of milking	31	77.5
Drying by intermittent milking	7	17.5
Drying by incomplete milking	0	0
Self drying	2	5.0
10. Drying period		
>2 months	33	82.5
<2 months	7	17.5
11.Teat dips		
Followed	0	0
Not followed	40	100
12.Testing for mastitis control		
Yes	0	0
No	40	100

lack of awareness of the respondents about teat dipping in relation to maintenance of good udder health in milking animals. The findings of Jacob and Anu [16] and Patabandha et al. (2014) were in agreement with the results of the present study where there is a scope for improving the knowledge of farmers by creating awareness regarding clean milk production through training programmes. The findings also get support from the findings of Sabapara et al. [12], who reported that majority (99%) of the tribal area of South Gujarat, India doesn't practice teat dipping procedure after milking.

4. CONCLUSION

Majority of respondents practised full hand milking. Few percent of respondents were still practising knuckling method which showed that the farmers still need more training and educated that knuckling is a wrong method of milking which may lead to teat injury and mastitis in the long term. Majority of respondents practised suckling of calf to induce milk letdown. Most of the farmers milking the animals at the same place of tethering in the byre. The findings of the result revealed that majority of the respondents milking the animal at dirty milking environment because of reduced animal housing hygiene and traditional method animal housing. All respondents followed two times milking, and a majority of them completed milking in 5-7 minutes. Majority of respondents did not practice straining of milk. Most of the dairy farmers dried the animal by complete cessation of milking followed by intermittent milking. The lack of awareness of the respondents about teat dipping concerning maintenance of good udder health in milking animals showed that none of respondent followed teat dipping after milking, though it is an excellent post-milking practice to reduce the udder infection. These results are showing that research institutes and extension functionaries should develop literature and organise effective awareness programmes for milking management practices, which can support in improving the milk yield as well as milk quality. Efforts of local livestock development officers, livestock supervisors, veterinary assistant surgeons and extension workers would be crucial. Efforts should be made to conduct intensive training programmes, group discussions, demonstrations, tours, field visits, awareness programme etc., for scientific milking management practices.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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