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Animal Welfare Practices followed by Dairy Farmers of Kathua District of Jammu and Kashmir State

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ABSTRACT

As we all are aware that safe and quality milk is being produced from healthy animals using management practices that are sustainable from an animal welfare, social, economic and environmental perspective. This study was carried out to find out the common animal welfare practices being practiced by randomly selected 120 dairy farmers in the four blocks of Kathua district of Jammu and Kashmir state of India. For the study, a door to door survey was conducted using semi-structured interview schedule to collect primary data on various dairy animal welfare practices like calf rearing, feeding, housing, breeding, health care and milking welfare keeping in mind the "Five Freedoms" concept for animal welfare. Data from the study revealed that 100 percent of the farmers took care of the calves at the time of birth, provided colostrums (44%) after the removal of placenta and fed milk to their calves for more than four months after birth, but as far as total calf welfare was concerned they were not practicing cutting, ligation and disinfection of naval cord as required. They were also providing necessary amount of greens and concentrates to their animals and in some parts of district, they had maintained the standards of feeding welfare by exposing their animals to green pastures. Majority of the respondents had constructed a separate (54%) and well directed (61%) houses for their animals. Height of the shelters was sufficient (67%) and had *kacha* floor (51%) in their animal sheds. Regarding the breeding welfare practices, majority of the respondents were practicing artificial insemination method and also got their animals examined after 90 days of insemination, which was a good breeding welfare practice. Majority of them had provided proper prophylactic measures to their animals from contagious diseases for their health welfare. They were milking their animals twice a day in the same place where they usually tied them. Majority of them were following good milking welfare practices by cleaning their hands, utensils and udder of the animal before milking.

Keywords: Dairy animal welfare, calf rearing, feeding, housing, breeding, health care, milking welfare

Human beings have long been concerned about the welfare of animals and this concern is still growing. Unlike in other civilizations, Indian culture is known to co-exist in harmony with animals. Mahatma Gandhi wrote, "The greatness of a nation can be judged by the way its animals are treated". India has made huge progress in enhancing milk production in recent decades with an all-time high of approximately 146 million tonnes in 2014-15, but the rising population and increasing demand for milk and milk products, have made a great scope for this industry. Animal husbandry is an integral component of Indian agriculture supporting livelihood of more than two-thirds of the rural population. Livestock provide nutrient-rich food products, dung as organic manure, draught power, hides and skin as a regular source of cash income for rural households and for that we need to provide good welfare to the animals. An animal is in a good state of welfare if it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and should be free from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention, veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter/ killing. Animal welfare is an essential part of good animal husbandry practices and it emphasizes both on animal's physical state and psychological well-being. Physical state

Table 1: Distribution of the respondents according to calf rearing welfare practices followed by the dairy farmers

Sl. No.	Calf rearing practices	Billawar (n=30) No.	Percent	Kathua (n=30) No.	Percent	Hiranagar (n=30) No.	Percent	Barnoti (n=30) No.	Percent	Total (N=120) No.	Percent
1	Care at the time of calving should be taken	30	100	30	100	30	100	30	100	**120**	**100**
2	Care of calf after calving										
	2.1) Removal of mucus from nostril of calf	30	100	30	100	30	100	30	100	**120**	**100**
	2.2) Cleaning of calf and hoof after the parturition	30	100	30	100	28	93	29	97	**117**	**97**
	2.3) Cutting and Ligation of naval cord	11	37	16	53	8	27	10	33	**45**	**37**
	2.4) Disinfection of naval cord	3	10	9	30	4	13	2	7	**18**	**15**
3	Feeding of colostrums to the calf										
	3.1) Feeding of colostrum within 1 hour of birth	5	17	6	20	4	13	7	23.3	**22**	**19**
	3.2) Feeding of colostrum within 1-4 hours of birth	11	37	12	40	9	30	13	43.3	**45**	**37**
	3.3) Colostrum to be fed only after the removal of placenta	14	46	12	40	17	57	10	33.3	**53**	**44**
4	Milk feeding of calf should be done										
	4.1) for less than 4 months	7	23	9	30	13	43	12	40	**41**	**34**
	4.2) for more than 4 months	18	60	17	57	11	37	12	40	**58**	**48**
	4.3) till milking period of cow	5	17	4	13	6	20	6	20	**21**	**18**
5	Castration										
	Do you prefer castration	10	33	19	63	15	50	12	40	**56**	**47**
6	Disbudding of calf										
	Do you prefer disbudding	18	60	14	47	19	63	15	50	**66**	**55**

includes: nutrition, exercise, social groupings, veterinary care and environmental conditions. Psychological state/ mental state includes: addressing animals, motivational needs, providing the animal with choice and control, matching the environment to animal's natural adaptations, encouraging animals to develop and use their cognitive abilities (Vasseur *et al.* 2010). These physical and mental domains provide a systematic method for identifying potential and actual impacts on animal welfare (Beausoleil and Mellor, 2015). Main building blocks of any animal welfare programme are animal's needs and desires for life, which is based on "Five Freedoms" concept for animal welfare. These are: Freedom from pain, injuries and diseases, Freedom from hunger, thirst and malnutrition, Freedom from discomfort, Freedom from fear and distress and Freedom to express normal behavior (Varma, 2007).

These five freedoms are now modified as the five basic needs of animals, relating to sufficient food and water, adequate shelter, the ability to display normal behaviour, physical handling that minimizes distress, protection and rapid diagnosis of injury or disease. Pain can be prevented by using appropriate ethical measures, injury can be prevented with careful handling of the animals and diseases can be prevented by maintaining herd health, proper nutrition, judicious use of assets with best welfare programs and proper veterinary care that enhance well-being. Animals should have an easy access to balanced feed and clean drinking water on a regular schedule as per their specific requirements.

Health of any animal is directly linked with the animal welfare practices that enhances the production performance of animal and minimizes animal disease, death loss, and behavioural problems. It is very important to check all animal welfare practices at basal level to keep dairy farming as economic farming for farmers, to give less suffering to animals, enhance production to match

Table 2: Distribution of the respondents according to feeding welfare practices followed by dairy farmers

(A)	BILLAWAR				
		Milch	Dry	Pregnant	Draught
Sl.No	Categories	(n=20)	(n=8)	(n=6)	(n=7)
1	Feeding green fodder	13 65%	3 37%	6 100%	5 71%
2	Feeding concentrates	10 50%	0 0%	4 67%	3 43%
3	Feeding mineral mixture	5 25%	0 0%	2 33%	3 43%
4	Feeding salt	11 55%	2 25%	4 67%	5 71%
5	Grazing practices followed	9 45%	7 87%	1 17%	6 86%
(B)	**KATHUA**				
		Milch	**Dry**	**Pregnant**	**Draught**
Sl.No	**Categories**	**(n=19)**	**(n=9)**	**(n=5)**	**(n=9)**
1	Feeding green fodder	14 73%	5 55%	4 80%	6 67%
2	Feeding concentrates	12 63%	1 11%	3 60%	4 44%
3	Feeding mineral mixture	4 21%	0 0%	3 60%	2 22%
4	Feeding salt	10 53%	4 44%	4 80%	7 78%
5	Grazing practices followed	9 47%	7 78%	1 20%	4 44%
(C)	**HIRANAGAR**				
		Milch	**Dry**	**Pregnant**	**Draught**
Sl.No	**Categories**	**(n=17)**	**(n=8)**	**(n=9)**	**(n=5)**
1	Feeding green fodder	12 70%	3 37%	7 78%	5 100%
2	Feeding concentrates	10 58%	0 0%	6 67%	3 60%
3	Feeding mineral mixture	7 41%	0 0%	5 55%	1 20%
4	Feeding salt	8 47%	2 25%	6 67%	4 80%
5	Grazing practices followed	9 52%	6 75%	1 11%	2 40%
	(D) BARNOTI	**Milch**	**Dry**	**Pregnant**	**Draught**
Sl.No	**Categories**	**(n=21)**	**(n=7)**	**(n=5)**	**(n=7)**
1	Feeding green fodder	16 76%	5 71%	4 80%	5 71%
2	Feeding concentrates	12 57%	0 0%	3 60%	3 43%
3	Feeding mineral mixture	8 38%	0 0%	2 40%	1 14%
4	Feeding salt	15 71%	4 57%	4 80%	5 71%
5	Grazing practices followed	10 48%	7 100%	1 20%	1 14%

with the growing population of the nation, less wastage of resources and to make healthy relations among animals, environment, farmers, veterinarians, government and other organizations. So, it is the responsibility of the farmers and other people associated with the dairy farming to make provision for good animal welfare through good animal husbandry practices. Keeping all these parameters in mind the study was undertaken in the said location to collect information at the grass root level about dairy animal welfare practices.

MATERIALS AND METHODS

The present study was conducted in Kathua district of Jammu and Kashmir state by following the multi-stage random sampling method. Kathua district has eight

Table 3: Distribution of the respondents according to housing welfare practices followed by dairy farmers

Sl.No.	Housing welfare practices	Billawar (n=30)		Kathua (n=30)		Hiranagar (n=30)		Barnoti (n=30)		Total (N=120)	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
1	Type of housing										
	1.1) Animals kept with family members	12	40	14	47	16	53	13	43	55	46
	1.2) Separately	18	60	16	53	14	47	17	57	65	54
2	Orientation of house										
	2.1) S-N	9	30	11	37	13	43	14	47	47	39
	2.2) E-W	21	70	19	63	17	57	16	53	73	61
3	Height of shelter										
	3.1) Sufficient	19	63	22	73	18	60	21	70	80	67
	3.2) Not Sufficient	11	37	8	27	12	40	9	30	40	33
4	Type of floor										
	4.1) Kacha	14	47	11	37	17	57	19	63	61	51
	4.2) Bricked	9	30	14	47	8	27	5	17	36	30
	4.3) Cemented	7	23	5	16	5	16	6	20	23	19
5	Height of wall										
	5.1) Full	18	60	22	73	19	63	21	70	80	67
	5.2) Half	9	30	8	27	9	30	8	27	34	28
	5.3) No wall	3	10	0	0	2	7	1	3	6	5
6	Height of floor should be more than ground level	24	80	17	57	16	53	19	63	76	63
7	Type of manger										
	7.1) Kacha	17	57	13	43	18	60	14	47	62	52
	7.2) pacca	11	37	16	54	9	30	12	40	48	40
	7.3) any other	2	6	1	3	3	10	4	13	10	8
8	Capacity of manger										
	8.1) Sufficient	21	70	24	80	19	63	20	67	84	70
	8.2) Not sufficient	9	30	6	20	11	37	10	33	36	30
9	Animal should have proper space inside the house	12	40	16	53	11	37	13	43	52	43
10	Animal should have proper space outside the house	19	63	21	70	18	60	20	67	78	65
11	Proper Ventilation facilities in house	10	33	12	40	11	37	14	47	47	39
12	Proper Lighting facilities in house	17	57	16	53	13	43	15	50	55	45
13	Proper sanitation and cleaning of house is important	20	67	23	77	19	63	17	57	79	66

14	Application of disinfectants done (intervals)					
	14.1) Daily	0 0	1 3	0 0	0 0	1 0.8
	14.2) Weekly	1 3	2 7	1 3	1 3	5 4.2
	14.3) Monthly	6 20	8 27	5 17	4 13	23 19
	14.4) Not used	23 77	19 63	24 80	25 84	91 76
15	Place of dung disposal					
	15.1) Near the house	19 63	18 60	20 67	21 70	78 65
	15.2) Away from house	11 37	12 40	10 33	9 30	42 35
	(Welfare in winter season)					
16	Use of warm clothes for cleaning	12 40	16 53	14 47	13 43	55 46
17	Proper bedding material should be provided to animal	14 47	19 63	13 43	16 54	62 52
18	Fire used for warming the house	11 37	9 30	8 27	6 20	34 28
19	Animals should be kept open during day time	20 67	25 83	22 73	21 70	88 73
20	Animals kept in house during night time	24 80	26 87	23 77	22 73	95 79
	(Welfare in summer season)					
21	Sprinkling of water on animal's body	16 53	17 57	14 47	13 43	60 50
22	Animals should be kept open during day time	29 97	30 100	28 93	29 97	116 97
23	Animals kept in house during night time	17 57	19 63	16 53	18 60	70 58
24	Clean drinking water should be provided	30 100	30 100	30 100	30 100	120 100

blocks. Out of the eight blocks, four blocks were selected randomly depending upon the zones (East, West, North, and South).

Barnoti from the north-east zone, Kathua from the south-east zone, Billawar from north-west zone and Hiranagar from the south-west zone. Three villages were selected randomly from each of the four selected blocks. Thus, a total of twelve villages were selected in all. From each selected village, 10 respondents having one or more dairy animal were randomly selected to make a total sample size of 120 respondents.

Then different animal welfare practices were recorded from the dairy farmers on six major aspects such as calf rearing practices, feeding practices, housing practices, breeding management practices, health care practices and milking management practices based on interview schedule.

Fig. 1: Map showing the locale (Kathua district) of the study

Table 4: Distribution of the respondents according to breeding welfare practices

Sl.No	Breeding management welfare practices	Billawar (n=30) No.	Percent	Kathua (n=30) No.	Percent	Hiranagar (n=30) No.	Percent	Barnoti (n=30) No.	Percent	Total (N=120) No.	Percent
1	Do you know the age of animals when they are ready for insemination	19	63	21	70	17	57	18	60	75	62.5
2	Age of Cattle/Buffalo at 1st insemination										
	2.1) less than 2.5 year	4	13	3	10	6	20	5	17	18	15
	2.2) 2.5-4.5 years	18	60	21	70	17	57	19	63	75	62.5
	2.3) more than 4.5 years	8	27	6	20	7	23	6	20	27	22.5
3	Method of insemination they prefer										
	3.1) Natural	13	43	11	37	14	47	17	57	55	46
	3.2) Artificial	17	57	19	63	16	53	13	43	65	54
4	Do you think that artificial method is more advantageous than natural	9	30	11	37	13	43	14	47	47	39
5	Do you know the signs of heat in cow	24	80	27	90	26	87	25	83	102	85
6	Do you know the time for detection of heat in animals										
	7.1) Morning	14	47	11	37	17	57	14	47	56	46.6
	7.2) Evening	13	43	18	60	12	40	15	50	58	48.4
	7.3) Night	3	10	1	3	1	3	1	3	6	5
7	Animals should be inseminated within 12-18 hours after detection of heat	14	47	17	57	12	40	11	37	54	45
8	After how many days cow/buffalo repeat its heat cycle										
	9.1) After 18-19 days	7	23	5	17	8	27	6	20	26	21.5
	9.2) After 20-21 days	15	50	17	57	16	53	19	63	67	55
	9.3) After 22-23 days	8	27	8	27	6	20	5	17	27	22.5
9	If animal does not conceive after 3rd insemination then it should be examined for reproductive disorders	21	70	23	77	20	67	19	63	83	69
10	Do you know the gestation period of animals	24	80	27	90	26	87	25	83	102	85
11	When you can diagnose the pregnancy in animals										
	10.1) After 90 days of conception	17	57	21	70	17	57	18	60	73	47.5
	10.2) 95 days	8	27	7	23	12	40	9	30	36	32.5
	10.3) 100 days	5	17	2	7	1	3	3	10	11	14

12	What is the normal time for expulsion of placenta					
	12.1) within 1 hour of calving	11 37	12 40	16 53	13 43	52 43
	12.2) within 2 hours of calving	14 47	17 57	13 43	14 47	58 48
	12.3) within 4 hours of calving	4 13	1 3	1 3	2 7	8 7
	12.4) more than 4 hours	1 3	0 0	0 0	1 3	2 2
13	Do you take the help of veterinary doctors in dystocia	26 87	28 93	24 80	25 83	103 86

RESULTS AND DISCUSSION

Calf rearing welfare

Welfare of the dairy animals starts with the welfare of the calves. On perusal of Table 1 it was found that all the respondents (100%) took care of the calves at the time of calving. After calving, 100% respondents removed mucus from the nostrils of the calves, 97% cleaned calves' body and hooves, whereas, 37% practiced cutting and ligation of naval cord and only 15% have performed disinfection of the naval cord. Regarding the colostrum feeding of calves, majority of the respondents (44%) were feeding colostrum to their calves after the release of placenta, while, only 19% were feeding within one hour of birth and remaining 37% respondents were feeding colostrum within 1-4 hours of birth. The findings of the study were in agreement with the findings reported by Dhiman *et al.* (1990) that the majority of farmers from rural and peri-urban areas were feeding colostrums to their animals only after the release of placenta. But on the other hand they were not following overall calf welfare practices like cutting, ligation and disinfection of naval cord. So, the findings of the study were in agreement with the findings reported by Sinha, (2006). In Kathua district majority of the farmers (48%) fed milk to their calves for more than four months. Similar results were reported by Singh and Singh, (2000) that in rural Haryana the majority of the respondents adopted practices of allowing suckling by the calf up to the age of 4 to 6 months. Castration of the calves was performed by 47% of the total. Out of this, 91% adopted Burdizzo method of castration and the remaining 9% adopted surgical method for castration. After the castration procedure, 89% have applied antiseptic/ tincture iodine on the wounds. Similarly, disbudding was being practiced by 66 respondents (55%) out of 120 respondents. Among 66 respondents, 61 respondents (92%) adopted caustic potash stick method of disbudding; two respondents (3%) used rubber ring method and remaining 3 farmers (5%) in favour of using electric dehorner for the disbudding. Ninety four per cent of the respondents had performed disinfection after disbudding.

Feeding welfare practices

Feeding welfare practices were categorized into five groups (green feed, concentrates, mineral mixture, salt feeding and grazing practices). Dairy animals were also categorized into milch, dry, pregnant and draught animal categories. A perusal of the data in Table 2 revealed that farmers of Barnoti block were providing more green fodder (76%, 71%, 80%, and 71% respectively) to their animals (milch, dry, pregnant and draught, respectively) in comparison with other blocks because the Barnoti block had throughout the year irrigation facility, so the availability of green fodder is more than in other block. Respondents of Hiranagar block were feeding more concentrates (58%, 67% and 60%) to milch (58%), pregnant (67%) and draught animals (60%) than the other blocks because majority of Hiranagar farmers had small land holding and less irrigation facilities. They were unable to afford greens or pastures for their animals.

So, they were more dependent on concentrate feed for their animals purchased from local market. Similar findings were reported by Deoras *et al.* (2004) that cost factor is responsible for deciding the feeding of concentrates to the dairy animals. In Kathua block farmers were providing more mineral mixture to milch (21%), pregnant (60%) and draught animals (22%) than in other blocks because Kathua block was the only block in the district which had reasonably more educated and aware dairy farmers than the farmers of other blocks. They knew the importance of

Table 5: Distribution of the respondents according to health care welfare

Sl.No	Health care welfare practices	Billawar (n=30) No. Percent	Kathua (n=30) No. Percent	Hiranagar (n=30) No. Percent	Barnoti (n=30) No. Percent	Total (N=120) No. Percent
1	**Can you diagnose a sick animal**	22 73	23 77	22 73	21 70	88 73
2	**When you go for check up of animals**					
	2.1) Daily	0 0	0 0	0 0	0 0	0 0
	2.2) Weekly	1 3	1 3	0 0	0 0	2 1.5
	2.3) Monthly	13 43.5	15 50	12 40	11 37	51 42.5
	2.4) Yearly	16 53.5	14 47	18 60	19 63	67 56
3	**Do you know that injured and diseased animals should be given proper rest**	26 87	28 93	25 83	25 83	104 87
4	**Proper veterinary care should be given to animals**	11 37	14 47	12 40	9 30	46 38
5	**Vaccination should be done to prevent animal from diseases**	14 47	17 57	13 43	14 47	58 48
6	**Do you provide prophylactic measures to animals from contagious diseases**	13 43	16 53	12 40	13 43	54 45
7	**What type of vaccine you are giving to animals against these disease**					
	7.1) H.S	21 70	23 77	17 57	19 63	80 67
	7.2) BQ	14 47	15 50	12 40	11 37	52 43
	7.3) FMD	19 63	20 67	17 57	18 60	74 62
	7.4) Anthrax	0 0	0 0	0 0	0 0	0 0
8	**Do you bury the dead bodies of animals that die due to contagious diseases**	5 17	7 23	4 13	2 7	18 15
9	**Do you deworm your animals after 6-12 months**	12 40	16 53	14 47	13 43	55 46
10	**Ectoparasites should be removed from animal's body**	22 73	24 80	21 70	18 60	85 71
11	**Which method you use to remove ectoparasites**					
	11.1) Medicine	16 53	21 70	19 63	20 67	76 63.3
	11.2) Desi	9 30	6 20	6 20	6 20	27 22.5
	11.3) Daily removal	5 17	3 10	5 17	4 13	17 14.2
	11.4) Any other					
12	**Do you go for disbudding of animals**	18 60	14 47	19 63	15 50	66 55
13	**Do you go for castration of animals**	10 33	19 63	15 50	12 40	56 47
14	**Nose roping of animals is applied by**					
	14.1) Veterinary doctor	10 33	11 37	13 43	14 47	48 40
	14.2) Yourself	2 7	1 3	0 0	1 3	4 3
	14.3) Not done	18 60	18 60	17 57	15 50	68 57

15	**Your animals are working in a day for**					
	15.1) less than 4 hours	8 27	11 37	6 20	7 23	32 27
	15.2) for 4 hours	12 40	16 53	18 60	14 47	60 50
	15.3)more than 4 hours	10 33	3 10	6 20	9 30	28 23
16	**What is the time of working of animals**					
	16.1) Morning	17 57	15 50	16 53	14 47	62 52
	16.2) Noon	0 0	0 0	0 0	0 0	0 0
	16.3) Evening	12 40	15 50	12 40	15 50	54 45
	16.4) Night	1 3	0 0	2 7	1 3	4 3
17	**Sick animals should be isolated from the healthy animals**	25 83	27 90	24 80	24 80	100 83

mineral mixture in the overall health welfare of the dairy animals. So, they were providing more nutritious diet to their milking and pregnant animals. Similar findings were reported by Malik *et al.* (2005) that milk production was the major criteria adopted by most of the respondents for feeding their animals.

Availability of feeds and fodder and stage of pregnancy were the other two criteria being followed by majority of farmers for feeding their dairy animals in Uttar Pradesh. Regarding the grazing practices of animals, respondents of Billawar block preferred more grazing (milch 45%, dry 87%, pregnant 17% and draught 86%) than the respondents in other block because most of the area of Billawar block was hilly and farmers were dependent on rain for the cultivation of crop and fodder. In general, access to pasture improves the welfare of dairy cattle because it provides a natural environment where cows can express behaviors such as grazing, exploring and can exercise which may be beneficial for their health and production of quality milk Krohn, (1994) and Regula *et al.* (2004). So, the findings of the study were in agreement with the findings reported by Webster *et al.* (2015) who reported that grazing practices can help in achieving good animal health and an overall welfare of the dairy animals.

Dairy animal housing welfare practices

The principle functions of the housing welfare (freedom from discomfort) of livestock are: health sustaining and comfortable environment for the animal, desirable working conditions for the labour/supervisory staff and integration of housing with feeding, watering, cleaning, handling, restraining and manure systems. Data in Table 3 revealed that 46% of respondents in Kathua district shared their residence with dairy animals but majority of the respondents (54%) had separate shelter for animals but the findings of the study were not in agreement with the findings of Garg *et al.* (2005) who observed that in the Baran district of Rajasthan only 17.82% respondents provided separate house to their animals and Malik *et al.* (2005) observed that in Uttar Pradesh majority of the landless agriculture labourers were sharing their family accommodation with animals. This is because in Kathua district, majority of the farmers had land and were not landless.

They had made separate houses for their animals. Study shows that 61% of the respondents were having the animal sheds with long axis in east-west direction and the remaining 39% of the farmers had constructed sheds in south-north direction. Regarding the height of shelter, majority of the respondents (67%), constructed animal shelters with sufficient height than other respondents (33%). As far as type of floor is concerned, 51% houses were having kacha floor, 30% houses were made up of bricks and only 19% houses had cemented floor but Singh *et al.* (2007) observed that in Punjab, all the respondents had had kacha floor in their animal sheds. Height of walls in an animal shelter is very important. Majority of the houses in Kathua district were having full wall (67%) and nearly 63% of houses were having floor above from the ground level. Majority of farmers were using kacha type of mangers in animal shelters (52%) with sufficient capacity (70%) for the animals. Animals should get empty space for their free movement inside or outside the shed. With

Table 6: Distribution of the respondents according to the milking welfare practices

Sl.No	Milking welfare practices	Billawar (n=30)		Kathua (n=30)		Hiranagar (n=30)		Barnoti (n=30)		Total (N=120)	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
1	**Where cow should be milked**										
	1.1) In same place after cleaning	21	70	24	80	22	73	27	90	94	78
	1.2) In a separate place	9	30	6	20	8	27	3	10	26	22
2	**Do you wash your hands before milking**	29	97	30	100	28	93	30	100	117	97
3	**Do you clean milking vessels with boiled water or with detergents**	28	93	29	97	27	90	28	93	112	93
4	**Do you clean the animal before milking**	17	57	21	70	18	60	19	63	75	62
5	**Do you clean the udder of the animal before milking**	30	100	30	100	30	100	30	100	120	100
6	**Do you milk the animal in calm and clean area**	12	40	15	50	13	43	11	37	51	42
7	**Do you give concentrates to the animals**	6	20	8	27	4	13	6	20	24	20
8	**Are you suffering from any contagious disease**	4	13	1	3	3	10	6	20	14	12
9	**Do you practice gentle massage of udder and teats before milking**	18	60	21	70	20	67	17	57	76	63
10	**Do you discard the 1st two streams of milk from each teat while milking**	25	83	24	80	21	70	26	87	96	80
11	**How many times you milk the animal in a day**										
	11.1) one time	2	7	0	0	1	3	0	0	3	2.5
	11.2) two times	28	93	30	100	29	97	30	100	117	97.5
12	**Do you tie the animals during milking**	27	90	25	83	28	93	24	80	104	87
13	**Milking is done**										
	13.1) Inside the shed	12	40	15	50	13	43	11	37	51	42
	13.2) outside the shed	18	60	15	50	17	57	19	63	69	58
14	**Methods of milking**										
	14.1) Stripping	12	40	13	43	15	50	18	60	58	48
	14.2) Full hand	18	60	17	57	15	50	12	40	62	52

regard to the space inside the shed, 43% farmers provided proper space inside the shed.

As far as outside space is concerned, 65% respondents believed that animals should get proper outside space. Proper ventilation facilities were available in 39% houses and 45% houses had lighting facilities. Animal houses were lacking, proper ventilation and lighting facilities in Kathua block. Similar findings were observed by Malik and Nagpaul, (1998) that in Haryana, the majority of the respondents had completely closed sheds and they were lacking ventilation and lighting facilities. In the study, 66% of respondents believed that proper sanitation and cleaning of houses was very important for proper health of animals. It was found that, 76% of respondents were not applying disinfectants in animal sheds. Few of them were using disinfectants at monthly intervals (19%), 4.2% of dairy owners were applying disinfectants at weekly intervals and only 0.8% adopted disinfection of shelters at daily intervals to reduce the risk of zoonotic diseases.

Regarding the location of manure pit in the areas under study, 65% of the respondents were having manure pit near the house and only 35% were having manure pit at a

distance. Similar, findings were observed by Singh *et al.* (2007) in Punjab that majority of the respondents (64.44%) disposed manure as such near the animal farm. During winter season, use of warm clothes for cleaning the animal was practiced by 46% farmers. About 52% respondents were providing proper bedding materials to the animals, 28% were using fire for warming the animal shed, 73% were keeping their animals open during day time and 79% respondents were keeping their animals in the shed during the night hours. The observations and findings of the study were in favour of findings reported by Rai *et al.* (1993) that livestock were kept open during the day time and tied up in the corner of the house at night in the villages of Mathura district of Uttar Pradesh. Regarding the welfare practices in summer season, 50% of the farmers sprinkled water on animal's body. Approximately, 97% of the respondents were keeping their animals open during summer season, 58% farmers were keeping their animals in shed during night time. All the respondents were providing clean drinking water to animals in summer.

Breeding management welfare practices

The findings regarding various breeding practices followed by respondents in Table 4 revealed that majority of the farmers (62.5%) were aware about the age of animals when they are ready for breeding. Fifty four per cent of the respondents were practicing artificial insemination, and towards majority of respondents (48.4 %) believed that evening is the suitable time for the detection of heat in animals. Regarding the knowledge of farmers about the repetition of heat cycle in animals, majority of the respondents (55%) believed that animals usually come into heat after 20-21 days, data revealed that majority of the respondents (45%) got their animals inseminated within 12-18 hours after the detection of heat.

Majority of the farmers (69%) from Kathua district got their animals examined for reproductive disorders if they were not conceiving even after 3rd insemination. About 85% of the respondents knew about the gestation period in animals. The study shows that majority of the respondents (47.5%) were going to veterinary hospitals for pregnancy diagnosis after 90 days of conception. Approximately 48% of the farmers reported that their animals' expelled placenta within two hours of calving and majority (83%) of the respondents were taking the help of veterinary doctors in dystocia cases. The awareness of the farmers about breeding managements was high but unfortunately they were lacking the breeding facilities in their villages.

Health care welfare aspects

Health is the level of functional and metabolic efficiency of a living being. Broom, (2000) opined that the welfare of an animal is its state as regards to its attempts to cope with its environment; for each coping system, the environment is that which is external to the system. One important part of the animal's state is that which involves attempts to cope with pathology (i.e. the health of the animal); so, health is part of welfare. Generally animals are born free of diseases or parasites expect those, which are transmitted intrauterine.

But, they usually acquire these diseases/ parasites either through contact with diseased animals or improper sanitation, feeding, care and management. Prevention of diseases is better and economical than to control an actual outbreak of the disease. The results in Table 5 revealed the health welfare practices followed by the respondents and it was observed that majority of the respondents (73%) could detect if their animals were sick. Majority of the respondents (56%) of Kathua district were going for check up of their animals after yearly intervals and 87% of farmers were giving rest to their injured or diseased animals. About 87% of the respondents believed that proper veterinary care should be given to the animals and nearly 48% of the dairy owners followed vaccination schedule to prevent animal's diseases. Approximately, 45% of the owners provided prophylactic measures against contagious diseases. Similarly, study reported by Prasad *et al.* (2002) that majority (42%) of the cattle owners in dry zone of Karnataka had knowledge about the precautionary measures to be taken against contagious diseases is matching with the study conducted in Kathua district.

Regarding vaccination against H.S, B.Q, F.M.D and Anthrax, majority of the farmers vaccinated their animals against H.S (67%), followed by F.M.D (62%) and B.Q (43%). No respondent was found getting his animal vaccinated against anthrax. Only 15% of the respondents buried their animals after death due to contagious disease. About 46% farmers dewormed their animals after 6-12 months interval. Similarly, Singh and Singh, (2000)

reported that very less percent of respondents were using dewormer and due to this reason the percentage of calf mortality was more. Approximately, 71% of the respondents believed that animals should be free from ectoparasites and majority of respondents (63.3%) were using medicines for the removal of ectoparasites. Regarding disbudding and castration of animals, 55% and 47% of farmers were adopting it, respectively. A majority of the respondents (57%) applied nose rope to control their animals, by taking the help of veterinary doctors for the purpose (40%).

Regarding the working hours of animals, majority of the farmers (50%) were using their animals in field for four hours, 27% were using their animals for less than four hours and 23% used their animals for more than four hours. As per the study, majority of the respondents (52%) preferred morning hours for working of animals, 45% farmers were putting their animals to work at evening and three per cent respondents used their animals during night hours. Eighty-three per cent farmers believed that sick animals should be isolated from the healthy animals. Similar results were reported by Bardhan *et al.* (2005) in Tarai area of Uttaranchal that the majority of respondents were following the practice of isolating the sick animals from the rest of the animals and were having knowledge of protecting animals from the ectoparasites.

Milking management welfare

Data in Table 6 gives a clear picture of the milking welfare practices that majority of the respondents (78%) were milking their animals in the same place where they tied them and the remaining 22% were milking their animals in separate places. Malik and Nagpaul, (1998) found that in Haryana 61.1% of the milkers used to milk their buffaloes at a separate dry place, whereas 38.9% milked them at the same place.

So, the findings of the study were not in agreement with the findings reported by Malik and Nagpaul, (1998) because in Kathua farmers preferred cleaning of animals followed by milking at the same place. Regarding the washing of hands and utensils before milking, Garg *et al.* (2005) reported in Baran district of Rajasthan that majority of the farmers washed their hands, utensils and udder before milking and kept their cows clean and very few milkers (10%) appeared dirty at the time of milking. Similar findings were observed in Kathua that ninety-seven percent of the respondents washed their hands before milking and 93% farmers have washed milking utensils before milking. Sixty-two percent of the respondents were cleaning their animals before milking. All the owners cleaned the udder of animals before milking. Twenty percent of the dairy owners of Kathua district were providing concentrates to their milking animals. A majority of farmers were practicing gentle massage of udder and teats before milking. Eighty per cent of the respondents discarded first two streams of milk while milking. Regarding the time of milking, majority of the respondents (97.5%) milked their animals twice a day and remaining 2.5% respondents were milking once in a day. Eighty-seven per cent of the dairy owner tied their animals before milking. Mostly, milking was done outside the shed (58%) and forty-two per cent milked their animals inside the shed. Stripping (48%) and full hand (52%) milking were the two commonly used methods of milking in district and the findings of the study was not in agreement with the study of Malik *et al.* (2005) who revealed knuckling as a major method of milking.

CONCLUSION

The study entitled “Animal welfare practices followed by dairy farmers of Kathua district of Jammu and Kashmir” was conducted to know the animal welfare practices being followed by the dairy farmers. It was found that majority of the respondents took care of the calves at the time of calving but they were not practicing cutting, ligation and disinfection of naval cord properly. They were giving colostrums after the expulsion of placenta and feeding milk to their calves for more than four months. Housing management was not good. The houses were lacking ventilation and lighting facilities. Cow dung was used to be disposed off near the house and water sources. Farmers were taking some of the precautionary measures such as vaccination against contagious diseases. They were cleaning their hands, utensils and udder of the animals prior to milking. The study was concluded with impression and suggestions that all the dairy farmers who derive economic benefits from animals, must have to meet the nutritional, housing comfort, healthcare and behavioural needs of their animals and should treat them with love and compassion.

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