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Barasara BR

Collage of Veterinary Science and
A.H., Kamdhenu University
Erstwhile AAU, Anand, Gujarat,
India

Hansmeet Kour

College of Veterinary Science,
Guru Angad Dev Veterinary and
Animal Sciences and University
GADVASU, Ludhiana, Panjab,
India

Naliyapara HB

ICAR–National Dairy Research
Institute, Karnal, Haryana,
India

Vaidya AC

Krishi Vigyan Kendra, Anand
Agricultural University, Anand,
Gujarat, India

Corresponding Author:

Barasara BR

Collage of Veterinary Science and
A.H., Kamdhenu University
Erstwhile AAU, Anand, Gujarat,
India

Knowledge of scientific horse rearing practices and constrain as perceived by horse owners of middle Gujarat

Barasara BR, Hansmeet Kour, Naliyapara HB and Vaidya AC

Abstract

Equines serve in a variety of agricultural practices such as ploughing, in local transportation and even in biomedical endeavours. For short, rough and difficult terrains, pack animals are still more cost-effective for hauling goods and moving people and materials in comparison to the mechanical transportation. The investigation was carried out in all district of middle Gujarat which fall under jurisdiction of Anand Agricultural University. All districts of middle Gujarat which fall under jurisdiction of Anand Agricultural University were selected for research, followed as per census data 2012. Number of samples from each district was selected to the proportion to population of each district. Horse owners were randomly selected from each district. Total respondent size was 150. It was found that majority of horse owner ere follow the scientific horse rearing practices.

Keywords: Horse rearing, scientific knowledge

Introduction

Livestock production and agriculture are inextricably linked, with each relying on the other, and both are critical to the nation's total food security. India is bestowed with the rich and largest diversity of livestock which is providing alternative employment and generating assets for the financial security of the rural farmers. About 5.08 percent of the GDP of the Gujarat state is contributed by the animal husbandry and dairy sector. Therefore, livestock development is essential for rural areas to thrive and flourish. Equines have been an integral part of our heritage Indian culture and nowadays, in the livestock sector, play a direct or indirect role in the income generation of the owner. Small, marginal, and landless farmers who rely on these animals for a variety of tasks are seen rearing equines in India. However, with the introduction of mechanization, equine rearing has declined. Even though the number of horses and ponies decreased nationwide in the 20th livestock census compared to the previous one by 45.6%, Gujarat saw a rise of about 19.42%, from 0.18 lakhs to 0.22 lakhs.

Equines serve in a variety of agricultural practices such as ploughing, in local transportation and even in biomedical endeavours. For short, rough and difficult terrains, pack animals are still more cost-effective for hauling goods and moving people and materials in comparison to the mechanical transportation. Efficient management plans to be designed by the policy makers demand a strong database. Therefore, the present study was aimed at studying the average scientific knowledge of the local horse-owners of Gujarat state. The main focus was kept on evaluating the knowledge of the owners about housing, breeding and feeding of the horses along with the foal-rearing practices followed by them.

Materials and Methods

The investigation was carried out in all district of middle Gujarat which fall under jurisdiction of Anand Agricultural University. All districts of middle Gujarat which fall under jurisdiction of Anand Agricultural University were selected for research, followed as per census data 2012. Number of samples from each district was selected to the proportion to population of each district. Horse owners were randomly selected from each district. Total respondent size was 150. Data were collected on performa recording sheets, were processed and analyzed as per Snedecor and Cochran (1994) [6]. Basic statistical tools like frequency distribution, percentage, mean, range, standard error, z test, t test and ratio etc., were used to draw the inferences.

Table 1: District-wise distribution of horse owners selected and interviewed

Sr. no.	District	No of horse	Respondent size
1	Anand	244	09
2	Ahmedabad	1270	47
3	Botad	980	38
4	Chota Udaipur	112	04
5	Dahod	37	02
6	Kheda	339	13
7	Mahisagar	380	14
8	Panchmahal	162	06
9	Vadodara	475	17
	Total	3999	150

Sampling method and measurement of variables

For the investigation simple random sampling technique employed. The variables under study were selected on the basis of extensive review of literature on the subject in consultation with experts. Only those variables, which were found most relevant to present investigation, were finally selected for the study.

Results and Discussion

Knowledge level of the horse owners about scientific horse rearing practices

Knowledge is the cognitive behaviour of an individual. The body of knowledge is the product of learning process. Once the knowledge is acquired, it produces changes in the thinking process of an individual which would lead to further changes in attitude and helps the horse owners in making rational decisions. It is a pre-requisite for adoption of scientific horse rearing practices. With this view an attempt has been made to determine the level of knowledge of the horse owners about scientific horse rearing practices. The data in this regarding level of knowledge of the respondents are presented practices wise in different table 2 to 7.

Individual/ Component wise knowledge level of the horse owners about scientific horse rearing practices

Table 2: Knowledge of foal rearing practices

(n=150)			
Sr. No.	Foal rearing practices	Frequency	Percent
1	Weight of foal at the time of birth	84	56.00
2	Time of stand on its leg after birth	140	93.33
3	First time offered colostrum's after birth	126	84.00
4	Quantity of colostrum's at first time	60	40.00
5	Care taken immediately after birth	122	81.33
6	Time of foal separated from its mother	82	54.67
7	Age of first vaccination of foal	38	25.33
8	Different vaccination at first time	104	69.33
9	Age of foal for use in professional purpose	122	81.33
10	Age of shoeing	70	46.67
11	Skill of shoeing / Owner ability for shoeing	32	21.33
	Average		59.39

The data presented in Table 2 indicated that the horse owners had average slightly less than three fifth (59.39 percent) of them had knowledge about foal rearing practices. Vast majority (93.33 percent) of the horse owners had knowledge regarding time required for foal to stand on its leg after birth. Knowledge regarding first time colostrums feeding to foal after birth was 84.00 percent. Knowledge about care to be

taken immediately after birth and age of foal for use in professional purpose was 81.33 percent. 69.33 percent horse owners had knowledge of different vaccination administration at first time and 56.00 percent had knowledge about weight of foal at the time of birth. 54.67 percent horse owners had knowledge of weaning time of foal and 46.67 percent had knowledge about age of shoeing in foal. 40.00 percent horse owners had knowledge about the quantity of colostrums feed at first time to the foal and 25.33 percent had knowledge about the age of first vaccination of foal. 21.33 percent horse owners had knowledge about the practice of shoeing in foal.

Table 3: Knowledge of reproduction practices

(n=150)			
Sr. No	Reproduction practices	Frequency	Percent
1	Age of mare at first heat	144	96.00
2	Length of heat time in mare	122	81.33
3	Symptoms of heat in mare	116	77.33
4	Weight of mare at first heat	60	40.00
5	Breeding time for mare after heat	98	65.33
6	Mare pregnancy confirmer time after breeding	80	53.33
7	After breeding mare in heat	90	60.00
8	Repeat breeding in mare	100	66.67
9	Select of stallion for female breeding	126	84.00
10	Pregnancy period in female horse	126	84.00
11	Time required for foaling	94	62.67
12	Symptom of foaling	120	80.00
13	Place required at the time of foaling	102	68.00
14	Care during dystocia in horse	112	74.67
15	Times required for retention of placenta in mare	96	64.00
16	Water requirement of mare after birth of foal	118	78.67
17	After foaling days required for mare to coming in heat	58	38.67
18	After foaling days required for breeding	36	24.00
19	Mating age of horse	96	64.00
20	Average weight of male horse at first time mating	84	56.00
	Average		65.93

The data presented in Table 3 indicated that the horse owners had slightly less than two third (65.93 percent) had average knowledge about breeding practices of horse. Vast majority (96.00 percent) horse owners had knowledge of age of mare at first heat, 84.00 percent horse owners had knowledge of selection of stallion for their horse breeding and pregnancy period in horse, 81.33 percent horse owners had knowledge of length of heat time in mare, 80.00 percent horse owners had knowledge of symptom of foaling, 78.67 percent horse owners had knowledge of water requirement of mare after birth of foal, 62.67 percent horse owners had knowledge of time required for foaling, 60.00 percent horse owners had knowledge of after breeding mare in heat, 56.00 percent horse owners had knowledge of average weight of male horse at first time of breeding. 53.33 percent horse owners had knowledge of mare pregnancy confirmer time after mating, 40.00 percent horse owners had knowledge of weight of mare at first heat, 38.67 percent horse owners had knowledge of after foaling days required for mare to coming in heat, 24.00 percent horse owners had knowledge of after foaling days required for breeding. This finding is similar to the finding of Patel (2015) [4] and Shaktigopal (2016) [5].

Table 4: Knowledge of housing practices (n=150)

Sr. No	Housing practices	Frequency	Percent
1	Selection of place of horse stable	140	93.33
2	Space requires for one horse in stable	50	33.33
3	Space required for manger of horse	30	20.00
4	Frequency of cleanliness in stable	132	88.00
5	Type of stable	120	80.00
6	Type of floor	106	70.67
7	Ventilation facility	130	86.67
8	Facility to prevent higher temperature in stable	152	88.00
9	Facility to prevent low temperature	130	86.67
10	Facility to prevent shower of rain water in stable	124	82.67
11	Drainage facility of horse's saliva and urine	118	78.67
	Average		73.45

The data presented in Table 4 indicated that the 73.45 percent horse owners had average knowledge about housing practices of horse. In this 93.33 percent horse owners had knowledge about selection of place of horse stable, 88.00 percent horse owners had knowledge of frequency of cleanliness in stable and facility to prevent higher temperature in stable, 86.67 percent horse owners had knowledge of ventilation facility requirement and to prevent low temperature in horse stable. 82.67 percent horse owners had knowledge of facility to prevent shower rain water, 80.00 percent horse owners had knowledge of different type of stable, 78.67 percent horse owners had knowledge of drainage facility of horse's saliva and urine, 70.67 percent horse owners had knowledge of different type of floor, 33.33 percent horse owners had knowledge of space requirement for one horse in stable, 20.00 percent horse owners had knowledge of space requirement for manger for one horse.

Table 5: Knowledge of health-related practices (n=150)

Sr. No	Health related practices	Frequency	Percent
1	Vaccination of horse	140	93.33
2	Different disease vaccination	112	74.67
3	Cause of tetanus	70	46.67
4	Symptoms of tetanus	116	77.33
5	Precaution for preventing tetanus	76	50.67
6	Causes for colic	122	81.33
7	Symptoms of colic	136	90.67
8	Traditional treatment of colic	112	74.67
9	Prevention of colic	62	41.33
10	Knowledge about wound on horse	138	92.00
11	Knowledge about glander	68	45.33
12	Symptoms of glander	18	12.00
13	Knowledge about glander spreading	10	06.67
14	Treatment for glander	18	12.00
15	Prevention of glander	18	12.00
16	Knowledge about aboutsurra	75	50.67
17	Symptoms of surra	28	18.67
18	Causal organism of surra	24	16.00
19	Knowledge about deworming	72	48.00
20	Knowledge about type of parasite	36	24.00
21	Knowledge about external parasite	74	49.33
22	Knowledge about internal parasite	30	20.00
23	Knowledge about bathing	62	41.33
24	Knowledge about grooming	124	82.67
25	Knowledge about daily exercise	124	82.67
	Average		49.76

The data presented in Table 5 indicated that the horse owners had average 49.76 percent knowledge about health care of horse. In this 93.33 percent horse owners had knowledge of

vaccination of horse, 92.00 percent horse owners had knowledge about wound on horse, 90.67 percent horse owners had knowledge of symptoms of colic, 82.67 percent horse owners had knowledge of daily exercise and grooming, 81.33 percent horse owners had knowledge of cause of colic, 77.33 percent horse owners had knowledge of symptom of tetanus, 74.67 percent horse owners had knowledge of different disease vaccination and traditional treatment of colic, 50.67 percent horse owners had knowledge of precaution for preventing tetanus and knowledge of about surra, 49.33 percent horse owners had knowledge of external parasite, 48.00 percent horse owners had knowledge about deworming, 46.67 percent horse owners had knowledge of cause of tetanus, 45.33 percent horse owners had knowledge of glander disease, 41.33 percent horse owners had knowledge of about bathing of horse and prevention of colic, 24.00 percent horse owners had knowledge about type of parasite, 20.00 percent horse owners had knowledge of internal parasite, 18.67 percent horse owners had knowledge about symptom of surra, 16.00 percent horse owners had knowledge of causal organism of surra, 12.00 percent horse owners had knowledge of symptom of glander, treatment for glander and prevention of glander, 06.67 percent horse owners had knowledge of glander spread.

Table 6: Knowledge of feeding practices (n=150)

Sr. No	Feeding practices	Frequency	Percent
1	Time of feeding	136	90.67
2	Method of feeding	132	88.00
3	Feed after shocking in water	60	40.00
4	Extra feed supplement	56	37.33
5	Quantity of water required	126	84.00
6	Time of watering	118	78.67
7	Change in feeding of horse	106	70.67
8	Requirement of gram	130	86.67
9	Requirement of grains (Barely, maize, oat, sorghum, pearl millet)	54	36.00
10	Requirement of dry fodder	100	66.67
11	Requirement of green fodder	138	92.00
12	Requirement of mineral mixture	98	65.33
13	Requirement of common salt	52	34.67
	Average		66.97

The data presented in Table 6 indicated that the horse owners had average 69.97 percent knowledge about feeding practices of horse. Vast majority of horse owners (92.00 percent) had knowledge of requirement of green fodder, 90.67 percent horse owners had knowledge of the feeding time of horse, 88.00 percent horse owners had knowledge of the method of

feeding, 86.67 percent horse owners had knowledge of the requirement of gram in feeding, 84.00 percent horse owners had knowledge of the quantity of requirement of water, 78.67 percent horse owners had knowledge of the time of watering, 70.67 percent horse owners had knowledge of the change in feeding of horse, 66.67 percent horse owners had knowledge of the requirement of dry fodder, 65.33 percent horse owners had knowledge of the requirement of mineral mixture feeding, 40.00 percent horse owners had knowledge of the feed after

shocking in water, 37.33 percent horse owners had knowledge of the extra feed supplement, 36.00 percent horse owners had knowledge of requirement the grains (barely, maize, oat, sorghum, pearl millet), 34.67 percent horse owners had knowledge of requirement the common salt in horse feeding. The finding of present study related to the findings of Hinton (1978) [1], Keiper and Keenan (1980) [2] and Jithendran *et al.* (1998) [3].

Table 7: Overall level of knowledge of the horse owners about scientific horse rearing practices (n=150)

Sr. No.	Horse owners' level of knowledge	Frequency	Percent
1	Very low (Up to 20 percent score)	00.00	00.00
2	Low (21 to 40 percent score)	06.00	04.00
3	Medium (41 to 60 percent score)	66.00	44.00
4	High (61 to 80 percent score)	74.00	49.40
5	Very high (Above 80 percent score)	04.00	02.60
Total		150	100.00

The data presented in Table 7 make it clear that, slightly less than one half (49.40 percent) of the horse owners had high level of knowledge about scientific horse rearing practices, followed by 44.00 percent, 04.00 percent and 02.60 percent, of them had medium, low, and very high level of knowledge about scientific horse rearing practices, respectively.

Thus, it can be concluded that great majority (93.40 percent) horse owners had medium to high level of overall knowledge about scientific horse rearing practices. Horse keeping is the

hobby of most of the horse owners so they are always trying to get more and more information about scientific horse rearing practices. Now a day, day to day internet facility through the mobile is available at remote places also with cheaper rate.

Individual/ component wise extent of adoption of scientific horse rearing practices by horse owners

Table 8: Adoption of foal rearing practices (n=150)

1	Foal rearing practices	NA	FA	PA	RA
1	Weight of foal at the time of birth (Kg)	142 (94.66)	0 (00.00)	4 (02.67)	4 (02.67)
2	First time offered colostrums after birth	0 (00.00)	24 (16.00)	18 (12.00)	108 (72.00)
3	Quantity of colostrums offered at first time	0 (00.00)	79 (52.66)	45 (30.00)	26 (17.34)
4	Care taken immediately after birth	6 (04.00)	18 (12.00)	77 (51.34)	49 (32.66)
5	Time of foal separated from its mother	0 (00.00)	54 (36.00)	83 (55.33)	13 (08.67)
6	Age of first vaccination of foal	16 (10.67)	96 (64.00)	8 (05.33)	30 (20.00)
7	Different vaccination at first time	14 (09.33)	10 (06.66)	115 (76.66)	11 (07.35)
8	Age of foal for use in professional purpose	16 (10.66)	36 (24.00)	35 (23.34)	63 (42.00)
9	Age of shoeing	106 (70.66)	12 (08.00)	14 (09.34)	18 (12.00)
10	Owner ability for shoeing	134 (89.33)	5 (03.34)	11 (07.33)	0 (00.00)

NA= Not Adopt, FA= Faulty Adopt, PA = Partially Adopt, RA= Right Adopt

The perusal of data presented in Table 8 indicated that vast majority (94.66 percent) of the horse owners had not weighted their foal at the time of birth. Only 2.67 percent of the horse owners had weighted their foal at the time of birth. Less than one fourth (24.0 percent) horse owners had used their horse in professional purpose at wrong age. More than two third (70.66 percent) horse owners were not using the scientific practices of shoeing in the horse feet. Only 12.00 percent horse owners had used the scientific practices of shoeing in the horse feet. Also 8.00 and 9.34 percent horse owners had faulty adoption of shoeing and partially adopted the shoeing practices, respectively. No one horse owners were able to himself rightly. Vast majority (89.33percent) of horse owners had no skill of the shoeing in horse. Only 7.33 percent horse owners had partially scientific skill of the shoeing.

Constraints faced by the horse owners in adoption of scientific horse rearing practices

Some important constraints faced by the horse owners in

scientific horse rearing practices are presented here. The horse owners were requested to express the constraints faced by them. These constraints were ranked according to their frequency and percentage and are presented in Table 9.

The perusal of data presented in Table 33observed that constraints faced by horse owners in adoption of scientific horse rearing practices in descending order of rank were: High expenditure (ranked 1st), followed by high cost of treatment (ranked 2nd), unavailability of veterinary doctor on time (ranked 3rd), unavailability of specialize trainer for training to horse (ranked 4th), twenty four hours labour required for taking care of horse (ranked 5th), high risk involved in the transportation of horse (ranked 6th), difficult to find a good pedigree stallion for serve to mare (ranked 7th) unavailability of green and dry fodder for horse (ranked 8th) sudden death of horse creates mental and economical losses (ranked 9th) some vices of horse injured the horse owners (ranked 10th).

Table 9: Constraints faced by the horse owners in adoption of scientific horse rearing practices (n=150)

Sr. No.	Constraints	Percent	Rank
1	High expenditure	81.25	1
2	High cost of treatment	80.83	2
3	Unavailability of veterinary doctor on time	80.00	3
4	Unavailability of specialize trainer for training to horse	70.42	4
5	Twenty four hours labour required for taking care of horse.	62.92	5
6	High risk involved in the transportation of horse	55.00	6
7	Difficult to find a good pedigree stallion for serve to mare.	54.17	7
8	Unavailability of green and dry fodder for horse	52.91	8
9	Sudden death of horse creates mental and economical losses.	50.00	9
10	Some vices of horse injured the horse owners	49.17	10

Conclusions

It can be concluded that major constraints expressed by the horse owners were high expenditure, followed by high cost of treatment, unavailability of veterinary doctor on time, unavailability of specialize trainer for training, twenty-four hours labor required for taking care of horse and high risk involved in the transportation of horse.

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