

STUDIES ON BREED CHARACTERISTICS OF KATHIAWADI HORSES

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ABSTRACT

The home tract of Kathiawadi horse is the Saurashtra region of Gujarat which comprises of the Rajkot, Bhavnagar, Surendranagar, Junagadh and Amreli districts. Survey of Kathiawadi horse was carried in three district viz. Bhavnagar, Surendranagar and Ahmedabad. Kathiawadi horses possess the blood of dull coloured, Presence of dark brown strip along the spine and concave profile of face are typical characteristics of Kathiawari horses. The various colours observed were Chestnut, Bay, Dun, Grey, Piebald, Skewbald, White and Palmino. The body colour distribution shows no specific trend, and showed a wide variation. The various colour marking observed in Kathiawadi horses were Star, Star-Strip, Star-Strip-Snip, Stocking, Blaze, Black Knee and Whirl on fore head. Few horses did not have any specific marking. Panchkalyani are the horses with any colour having Star, Strip on for head and white fore legs. The panchkalyani horses were predominantly observed in Kathiawadi horses. Kathiawadi horses have small erect ears, which touch to each other. The forehead is concave have wide nostrils, with large prominent eyes, straight back with long curley tail. The study of breed characters Kathiawadi horses under field revealed the fact that there is an urgent need to educate the horse owners in respect of proper breeding of Kathiawadi horses and strengthening of Veterinary Aid Centers and Service Centers.

Keywords : breed characteristics, kathiawadi horses

INTRODUCTION

The horse was domesticated round about 3000 years B.C. The modern horse has probably descended from the wild horse found in the Northern Asia. It was domesticated by the nomadic tribes in the areas now recognized as Southern Siberia, Mongolia and Kazakisthan. India is having 0.83 million horses, which is 1.37 per cent of the world horse population. There are nearly 60 different breeds of horses in the world. Six important breeds of horses in India are Kathiawadi, Marwadi, Manipuri, Bhutani, Spiti and Chumarti. Exotic breeds introduced in the country are Arabian and Thoroughbred. There was 53 per cent decline in state horse population during last decade.

Kathiawadi, Kutchi or Kathi horse found in Gujarat is one of the best breed of India, well-known for gait and speed. No history is available about their domestication in India. However the superintendent of the Gaekwar suggested that the Kathiawar breed may have sprung from the wild horses of Kathiawad (Bombay Gazettee). The breeding tract of Kathiawadi horse is the Saurashtra region of Gujarat

which comprises of the Rajkot, Bhavnagar, Surendranagar, Junagadh and Amreli revenue districts. The best breeding area is known as Panchal in the heart of the region which include Chotila, Paliad, Anandpur, Bhimora and Jasadan talukas

The Bombay Gazette mentioned 28 distinct strains of the Kathi breed in the breeding tract. Kathiawadi horses are mostly reared by the Kathi community (Rajput). The Kathiawadi breed of horse is well known for its alertness, faithfullness and Rawal gait which are special features of this breed. It is hardy vigorous and well-known for pace and speed. No scientific study is available for the recognition of Kathiawadi horse for their breed characteristics. Looking to the importance of Kathiawadi horse in home tract the study physical characteristics of Kathiawadi horses was undertaken.

OBJECTIVE

To study the breed characteristics of kathiawadi horses

METHODOLOGY

The study was carried out in the Surendranagar , Bhavnagar and Ahmedabad districts of Gujarat. A field survey of Kathiawadi horse was carried in three district viz. Bhavnagar , Surendranagar and Ahmedabad. Bhavnagar district covering 5 talukas ,comprising 20 villages and 74 horseowners having 118 horses. Surendranagar covering 3 talukas , comprising 23 villages, 64 horse owners having 83 horses. Ahmedabad district covering 3 talukas, comprising 12 villages and 46 horse owners having 59 horses. At the time of recording the horses were made to stand in a normal relaxed position on leveled ground. All the body measurements

were measured in centimeters by a flexible tailors tape. Body measurements included were Length of Forehead, Ear, Width of Ear, Face Length and Width, Length(Body Length), Length of Neck, Back and Tail, Width of Chest, Heart Girth, Belly Girth, Distance between Knee to Fetlock, Height at Knee, Diameter of Hoof, Distance between fetlock to coronet, Height at hock, Croup to head of tail, Height at rump and wither .The horses included in the study were also examined for their color pattern and body condition score. The data collected were statistical analysed as per Snedecor and Cochran (1983). The mean, standard error and percentage incidence were estimated.

| Sr. No | Districts | Talukas | Villages | No.of horse owners | No. of Kathiawadi horses investigated | | |
|--------|---------------|---------|----------|--------------------|---------------------------------------|--------|-------|
| | | | | | Male | Female | Total |
| 1 | Surendranagar | 3 | 23 | 64 | 9 | 74 | 83 |
| 2 | Bhavnagar | 5 | 20 | 74 | 38 | 80 | 118 |
| 3 | Ahmedabad | 3 | 12 | 46 | 7 | 52 | 59 |

RESULTS AND DISCUSSION

Horse breeding in India is in the hand of traditional horse owners. They play crucial role in developing and preserving valuable germ plasma of horse breeds like Kathiawadi and Marwadi. The total horse and ponies population in Gujarat is 14381 which is 0.068 per cent of total livestock population. The horse and ponies population in Ahmedabad were 1613, Surendranagar 1229 and in Bhavnagar 1443 which is 11.12 per cent, 8.55 per cent and 10.03 per cent of total horse and ponies population respectively.

Age group

The average age of Kathiawadi horses studied was 7.34 years while it was 7.17, 7.59 and 7.27 years for horses of Ahmedabad, Surendranagar and Bhavnagar district respectively. Maximum number of horses were in 6 to 10 years group (65.77 per cent) followed by less than 5 years group (26.15 per cent) and minimum in more than 10 years age group (8.08 per cent). Similar trend was also recorded for all the three district under present study.

| District | Av. age of horse study (Years) | Age group classification (percent) | | |
|---------------|--------------------------------|------------------------------------|-----------------|----------------------|
| | | 5 and less (Years) | 6 to 10 (Years) | More than 10 (Years) |
| Ahmedabad | 7.17 ± 0.44(59) | 11.86(7) | 72.88(43) | 15.26(9) |
| Surendranagar | 7.59 ± 0.23(83) | 22.89(19) | 71.08(59) | 6.03(5) |
| Bhavnagar | 7.27± 0.25(118) | 35.59(42) | 58.48(69) | 5.93(7) |
| Overall | 7.34± 0.21(260) | 26.15(68) | 65.77(171) | 8.08(21) |

Breed Characteristics

Kathiawadi horses possess the blood of dull coloured, Mongolian horses *Equus Prazawalskil*. Presence of dark brown strip along the spine and concave profile of face are the most prominent characteristics of Mongolian horses, which are typical characteristics of Kathiawari

horses .By studying the confirmation of an animal we can ascertain its type and breed. It is also possible to judge from animals external appearance, its state of health, condition and temperament and to some extent its constitution and usefulness. Moreover, the external appearance is an indication of care taken of an animal by the breeder with regard to feeding, living conditions and use.

Body colour

The various colours observed were Chestnut, Bay, Dun, Grey, Piebald, Skewbald, White and Palmino. The predominant body colour of Kathiawadi horses were Chestnut (35.8 per cent), Bay(34.2 per cent), Grey (22.3 per cent), Skewbard (4.22 per cent). While other colours were one or below 1 per cent. The body colour distribution district wise showed similar trend. In Ahmedabad district maximum horses were of Bay colour , followed by Chestnut and Grey and in Surendranagar district it was Chestnut and Bay colour was

equal in distribution. While in Bhavnagar district maximum horses were of Grey colour followed by chestnut and Bay. Pundir *et al* (1997) and Vaidya *et al.*, (2016) observed Chestnut(47.73 per cent),Bay (31.82 per cent) , Dun (6.82 per cent) and Grey (13.63 per cent) and Singh *et.al.* (2002) reported Chestnut (50 per cent),Bay (31 per cent) ,Dun (4 per cent), Grey (3 per cent) Skewbald (7 per cent) and others 5 per cent. The body colour distribution shows no specific trend, and showed a wide variation. This might be due to different colour liking of horse owners. Thus Chestnut and Bay are the dominant body colours of Indian horses.

n=260

| Districts | No. | Chestnut | Bay | Dun | Grey | Piebald | Skew bald | White | Palmino |
|---------------|-----|---------------|---------------|-------------|---------------|-------------|--------------|-------------|-------------|
| Ahmedabad | 59 | 35.59 (21) | 38.97 (23) | 1.70 (1) | 13.56 (8) | 3.39 (2) | 3.39 (2) | 1.70 (1) | 1.70 (1) |
| Surendranagar | 83 | 43.37 (36) | 43.37 (36) | 1.21 (1) | 9.64 (8) | 0.00 (0) | 2.41 (2) | 0.00 (0) | 0.00 (0) |
| Bhabnagar | 118 | 30.51 (36) | 25.42 (30) | 0.00 (0) | 35.59 (42) | 1.70 (2) | 5.93 (7) | 0.00 (0) | 0.85 (1) |
| Overall | 260 | 35.80 (93) | 34.20 (89) | 0.80 (2) | 22.30 (58) | 1.54 (4) | 4.22 (11) | 0.38 (1) | 0.76 (2) |

Colour marking

The colour marking in horses is very much important for identification, written description of the horse. The various colour marking observed in Kathiawadi horses were Star, Star-Strip, Star-Strip-Snip, Stocking, Blaze, Black Knee and Whirl on fore head. Few horses did not have any specific marking. The pre-dominant colour marking observed in Kathiawadi horses were Star (41.15 per cent), Star-Strip (7.31 per cent), Star-Strip-Snip (15.78 per cent), Stocking

(6.15 per cent), Blaze (2.69 per cent), Black Knee (0.38per cent)and Whirl on fore head (2.69 per cent). About 23.85 percent of horses does not have any specific colour marking. More or less similar distribution of colour marking was observed for Ahmedabad, Surendranagar and Bhavnagar District. No worker has reported percentage of different body colour marking in Kathiawadi horses while Patel (1998) reported the importance of body colour marking in written description and for maintaining proper record of horses.

n=260

| Districts | No | Star | Star, Strip | Star, Strip, Snip | Stocking | Blaze | Black Knee | Whirl on fore head | No marking |
|---------------|-----|----------------|---------------|-------------------|--------------|-------------|-------------|--------------------|---------------|
| Ahmedabda | 59 | 52.54 (31) | 1.70 (1) | 6.77 (4) | 3.39 (2) | 3.39 (2) | 1.70 (1) | 1.70 (1) | 28.81 (17) |
| Surendranagar | 83 | 33.75 (28) | 6.02 (5) | 14.46 (12) | 6.02 (5) | 1.20 (1) | 0.00 (0) | 1.20 (1) | 37.35 (31) |
| Bhavnagar | 118 | 40.68 (48) | 11.02 (13) | 21.18 (25) | 7.63 (9) | 3.39 (4) | 0.00 (0) | 4.24 (5) | 11.86 (14) |
| Over all | 260 | 41.15 (107) | 7.31 (19) | 15.78 (41) | 6.15 (16) | 2.69 (7) | 0.38 (1) | 2.69 (7) | 23.85 (62) |

Marking of head

The Kathiawadi horse have a typical head markings. The various head marks observed were Star, Star Strip, Star Strip Snip, Blaze and whirl on fore head. About 30.38 per cent of horse were not having any specific head marking. The frequency and number of various head marking were

Star, Star Strip, Star Strip Snip, Blaze and whirl on fore head where 41.15 per cent, 7.31 per cent, 15.78 per cent, 2.69 per cent and 2.69 per cent respectively. While district wise it showed a slight different trend. Certain head marking were more while other were less in occurrence. Common head marking in all districts was Star.

| District | Observations | Star | Star, Strip | Star, Strip, Snip | Blaze | Whirl on for head | No marking |
|---------------|--------------|----------------|---------------|-------------------|-------------|-------------------|---------------|
| Ahmedabad | 59 | 52.54 (31) | 1.70 (1) | 6.77 (4) | 3.39 (2) | 1.70 (1) | 33.90 (20) |
| Surendranagar | 83 | 33.74 (28) | 6.02 (5) | 14.46 (12) | 1.21 (1) | 1.21 (1) | 43.36 (36) |
| Bhavnagar | 118 | 40.68 (48) | 11.02 (13) | 21.19 (25) | 3.38 (4) | 4.24 (5) | 19.49 (23) |
| Over all | 260 | 41.15 (107) | 7.31 (19) | 15.78 (41) | 2.69 (7) | 2.69 (7) | 30.38 (79) |

Body Measurement

The length of fore head was ranging from 14 to 26 cms with an average of 18.54 cms.. The length and width of ear was ranging from 10 to 18 cms and 5-9 cms, with an average of 13.12 cms and 7.2 cms respectively. According to Pundir *et al* (1997) ear length of Kathiawadi horse were 15.4 cms and according to Singh *et al* (2002) ear length and width was 10.95 cms and 6.75 cms respectively. The difference in measurement might be due to number of observations. The face length and face width was ranging from 24 to 52 and 24 to 31 with an average of 33.41 cms and 19.80 cms. According to Pundir *et al* (1997) face length and width was 53.7 cms and 21.5 cms and Singh *et al* (2002) reported same as face length 50.61 cms and width 21.41 cms. Face width was nearly similar to present findings. The body length was ranging from 140 cms to 152 cms with an average of 147.60 cms. Pundir *et al* (1997) reported small body length 119.8 while Singh *et al* (2002) observed similar body length of 148.51 cms. The length of neck, back and tail was ranging from 60-89, 70-92 and 38-45 cms with an average of 78.39, 76.22 and 42.52 respectively. Pundir *et al* (1997) reported tail without switch was 42.1 cms while Singh *et al* (2002) reported neck, back and tail length 78.01, 75.66 and 42.47 cms which was similar to present findings. Width of Chest was ranging from 22-43 cms with an average of 33.40 cms. Similar Chest width of 33.34 cms was also reported by Singh *et al* (2002). Heart girth and berry girth was ranging from 144-197 and 155-219 cms with an average of 166.15 cms and 171.81 cms.. Similar heart girth and body girth were reported by Pundir *et al* (1997), Singh *et al* (2002). The distance between knee to fetlock and height at knee were ranging from 21-33 cms and 38-56 cms with an average of 25.55 and 43.07 cms. According to Pundir *et al* (1997) height at knee was 54.1 cms and according to Singh *et*

al (2002) height at knee was 42.02 cms which were similar findings to present study. The diameter of hoof was ranging from 32-49 cms with an average of 42.34 cms. No workers had reported diameter of hoof. Distance between fetlock to coronet and height at hock were ranging from 8-13 and 50-60 cms with an average of 11.36 and 55.16 cms. Singh *et al* (2002) height at hock was 58.62 cms. The slight difference might be due to number of observations. Distance between croup to heed of tail was ranging from 30-46 cms with an average of 33.62 cms. The distance between croup to head of tail was 32.33 cms which was similar to our findings. Singh *et al* (2002) Height at wither and height of rump was ranging from 138-155 and 140-156 cms with and average of 145.74 cms and 146.56 cms. According to Pundir *et al* (1997) height at rump was 147.9 cms and according to Singh *et al* (2002) height at withers was 146.92 cms and height at rump was 146.78 cms which were similar to present study.

Forehead

The forehead was concave and erect ears touching to each other Similar concave forehead and erect ears touching to each other in Kathiawadi horses have been reported by Pundir *et.al* (1997) and Singh *et.al* (2002). The eyes were large and alert . Similar alert eyes were reported by Ghanshyamji (1991), Pundir *et.al* (1997) and Singh *et.al* (2002). The prominent eye colours were black 89.62 per cent , brown 10 per cent and others 0.38 per cent respectively. While Pundir *et.al* (1997) observed slightly different eye colour pattern , black 57 per cent , brown 27 per cent and black & brown 16 per cent . The variation might be due to more number of horse under present investigation. All the horses were alert and no horses were dull. While Pundir *et.al* (1997) reported 86 per cent alert and 14 per cent dull horses.

Body Measurements of Kathiawadi Horses

n=260

| Sr. No. | Body measurement | Ahmedabad (59) | Surendranagar (83) | Bhavnagar (118) | Overall Range | Overall (260) |
|---------|-------------------------------------|----------------|--------------------|-----------------|---------------|---------------|
| 1 | Length of Forehead | 18.95 ± 0.18 | 18.32 ± 0.13 | 18.36± .11 | 24-26 | 18.5 ± 0.08 |
| 2 | Length of Ear | 13.03 ± 0.22 | 14.23 ± 0.17 | 12.02±0.16 | 10-18 | 13.12± .12 |
| 3 | Width of Ear | 7.12 ± 0.05 | 7.3 ± 0.03 | 6.93 ± 0.04 | 5-9 | 7.2 ± 0.03 |
| 4 | Face length | 34.37 ± 0.64 | 32.04 ± 0.22 | 33.82±0.10 | 24-52 | 33.41± .18 |
| 5 | Face width | 19.77 ± 0.33 | 20.83 ± 0.13 | 18.75± .15 | 24-31 | 19.80±0.13 |
| 6 | Length | 147.7 ± 0.16 | 147.75 ± 0.2 | 147.36±0.11 | 140-152 | 147.60±.09 |
| 7 | Length of neck | 79.07 ± 0.37 | 77.63 ± 0.23 | 78.4 ± 0.11 | 60-89 | 78.39± .14 |
| 8 | Length of back | 77.43 ± 0.5 | 75.33 ± 0.13 | 75.89 ± 0.10 | 70-92 | 76.22±0.14 |
| 9 | Length of Tail | 42.85 ± 0.3 | 42.32 ± 0.13 | 42.38 ± 0.08 | 38-45 | 42.52± .09 |
| 10 | Width of chest | 33.92 ± 0.4 | 33.03 ± 0.27 | 33.24 ± 0.11 | 22-43 | 33.40± .14 |
| 11 | Heart Girth | 169.44± .75 | 164.74 ± 0.43 | 166.28± .35 | 144-197 | 166.15±.28 |
| 12 | Belly Girth | 172.92± .91 | 170.95 ± 0.29 | 171.55± .10 | 155-219 | 171.81± .23 |
| 13 | Distance between knee to fetlock | 25.92 ± 0.39 | 24.03 ± 0.29 | 26.71 ± 0.28 | 21-33 | 25.55± .19 |
| 14 | Height at knee | 44.32 ± 0.43 | 42.21 ± 0.13 | 42.67 ± 0.10 | 38-56 | 43.7 ± 0.12 |
| 15 | Diameter of Hoof | 41.69 ± 0.59 | 44.34 ± 0.33 | 40.98 ± 0.34 | 32-49 | 42.34± .25 |
| 16 | Distance between fetlock to coronet | 11.53 ± 0.11 | 11.09 ± 0.10 | 11.47 ± 0.05 | 8-13 | 11.36± .05 |
| 17 | Height at hock | 54.81 ± 0.21 | 54.70 ± 0.21 | 55.98 ± 0.13 | 50-60 | 55.16 ± 0.11 |
| 18 | Croup to head of tail | 34.25 ± 0.43 | 33.55 ± 0.32 | 33.05 ± 0.16 | 30-46 | 33.62 ± 0.18 |
| 19 | Height at wither | 146.12 ± 0.31 | 146.05 ± 0.23 | 145.06 ± 0.19 | 138-155 | 145.74 ± 0.14 |
| 20 | Height at rump | 147.11 ± 0.29 | 146.58 ± 0.23 | 145.98 ± 0.18 | 140-156 | 146.56 ± 0.13 |

Ninty per cent were having straight back, 2.69 per cent were having Concave and 7.31 per cent were having moderate back. Straight back was observed in majority of horses in all district. Concave and Moderate back were comparatively more in Ahmedabad district, it was 18.64 per

cent and 6.78 per cent respectively. In the present study 90 per cent of the animal were observed with straight back while Pundir *et.al.* (1997) reported 100 per cent of animals with straight back. Singh *et.al.*(2002) reported the curved back in Kathiawadi horse.

Type of back

n=260

| District | Observations | Straight | Concave | Moderate |
|---------------|--------------|------------|---------|-----------|
| Ahmedabad | 59 | 74.58(44) | 6.78(4) | 18.64(11) |
| Surendranagar | 83 | 97.59(81) | 0.00(0) | 2.41(2) |
| Bhavnagar | 118 | 92.37(109) | 2.54(3) | 5.09(6) |
| Overall | 260 | 90.00(234) | 2.69(7) | 7.31(19) |

Panchkalyani

Bhavnagar districts respectively.

n=260

Panchkalyani are the horses with any colour having Star, Strip on for head and white fore legs. The characteristics of panchkalyani horses were predominantly observed in Kathiawadi horses. The percent distribution of panchkalyani and other in Kathiawadi horses were thoroughly examined. The panchkalyani horses were 61.02 per cent, 62.65 per cent and 52.54 percent in Ahmedabad, Surendranagar and

| District | Observation | Panchkalyani | Other |
|---------------|-------------|--------------|------------|
| Ahmedabad | 59 | 61.02(36) | 38.98(23) |
| Surendranagar | 83 | 62.65(52) | 37.35(31) |
| Bhavnagar | 118 | 52.54(62) | 47.46(56) |
| Overall | 260 | 57.69(150) | 42.31(110) |

Tail shape

A 89.62 per cent of horses were having curled tail and 10.38 per cent were having straight. Pundir *et.al.* (1997) observed curved tail in 100per cent Kathiawadi horses while in present study it was 89.62 per cent with curled tail and 10.38 per cent were with straight tail.

n=260

| District | Observation | Curled | Straight |
|---------------|-------------|------------|-----------|
| Ahmedabad | 59 | 76.27(45) | 23.73(14) |
| Surendranagar | 83 | 86.75(72) | 13.25(11) |
| Bhavnagar | 118 | 98.31(116) | 1.69(2) |
| Overall | 260 | 89.62(233) | 10.38(27) |

Temperament

The temperament of horse is very much important. Horse with docile temperament were preferred over animal with nervous and aggressive temperament. The docile horses were good learner and can be trained easily. Majority of horse were in docile category about 93.85 per cent while 6.15 per cent were either nervous or aggressive. Pundir *et.al.* (1997) observed 89 per cent of docile and 11 per cent nervous The variation in percentage might be due to number of horse under study.

n=260

| District | Observation | Docile | Nervous |
|---------------|-------------|------------|----------|
| Ahmedabad | 59 | 93.22(55) | 6.78(4) |
| Surendranagar | 83 | 91.57(76) | 8.43(7) |
| Bhavnagar | 118 | 95.76(113) | 4.24(5) |
| Overall | 260 | 93.85(244) | 6.15(16) |

CONCLUSION

Kathiawadi horses have small erect ears, which touch to each other. The forehead is concave have wide nostrils, with large prominent eyes, straight back with long curley tail. The average age of mare studied was 7.74 years and stallion was 8.55 years. The pre-dominant body colours of Kathiawadi horses were Chestnut, Bay, Grey, Skewbald. Colour markings observed in Kathiawadi horses were Star, Star-Strip, Star-Strip-Snip, Stocking, Blaze. Black Knee, Whirl on forehead

The average length of forehead was 18.54 cms, the

average length and width of ears was 13.12 and 7.2 cms, the length and width of face was 33.41 and 19.80. The body length was 147.60 cms., the length of neck, back and tail was 78.39, 76.22 and 42.52 respectively. The chest width was 33.40 cms., heart girth and belly girth was 166.15 and 171.81 cms respectively. The distance between knee to fetlock and height at knee was 25.55 and 43.07 cms respectively. The diameter of hoof was 42.34 cms. Distance between fetlock to coronet and height at hock was 11.36 and 55.16 cms respectively. The distance between croup to head of tail was 33.62 cms while height at wither and height at rump was 145.74 cms and 146.56 cms respectively. The average body weight of horses calculated was ranging from 473.58 kg to 519.07 kg.

The study of breed characters Kathiawadi horses under field revealed the fact that there is an urgent need to educate the horse owners in respect of proper breeding of Kathiawadi horses and strengthening of Veterinary Aid Centers and Service Centers.

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