

International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693
 ISSN Online: 2617-4707
 NAAS Rating (2025): 5.29
 IJABR 2025; 9(11): 501-504
www.biochemjournal.com
 Received: 15-08-2025
 Accepted: 18-09-2025

BN Chaudhari

Department of Livestock
 Production and Management,
 College of Veterinary Science
 and Animal Husbandry,
 Navsari Agricultural
 University, Gujarat, India

PA Patel

Department of Animal Science,
 B.A. College of Agriculture,
 Anand Agricultural
 University, Anand, Gujarat,
 India

RB Khant

Department of Veterinary
 Microbiology, Veterinary
 College, AAU, Anand, Gujarat,
 India

Influence of suckling traits on early life performance of surti buffalo calve

BN Chaudhari, PA Patel and RB Khant

DOI: <https://www.doi.org/10.33545/26174693.2025.v9.i11g.6352>

Abstract

Suckling behaviour in neonatal calves varies considerably among individuals and plays an important role in early growth and development. To characterise key suckling traits and assess their influence on the growth performance of newborn calves, a study was carried out on the suckling behaviour of 18 newborn Surti buffalo calves maintained at the Livestock Research Station, Navsari Agricultural University, Navsari. Male calves required more time to initiate their first suckling (81.22 ± 9.7 min) compared with female calves (75.22 ± 8.7 min). The higher activity scores observed in male calves may indicate comparatively superior health and vigour. Female calves exhibited a significantly longer teat-holding duration (210.00 ± 15.71 sec) relative to male calves (180.47 ± 14.23 sec). In the present study overall number of strokes required by female were significantly ($p < 0.01$) higher than male, number of strokes associated with milk feeding which affect growth of calves. The mean value of weight gain in male calves was (381.91 ± 27.62 gm/day) while in female calves (352.75 ± 24.29 gm/day) respectively.

Keywords: Surti buffalo calves, suckling behaviour, teat-holding duration

Introduction

Adequate amount of high-quality colostrum at birth, sufficient quantities of milk during suckling and adequate feeding after weaning are important steps for the overall well-being and growth of calves (Corbet, 2001) [1]. Suckling traits affect the growth rate of calves in Gir cattle at various days of age. Number of strokes made during suckling for letting down lead to highest growth rate in calves (Singh *et al.*, 2016) [7]. Within a few hours after parturition, the buffalo calves begin to show hunger by exploring the mother's body with muzzle and tongue until a teat is located, the calf readily mouths and sucks any protuberance on the mother's body (Hafez, 1992) [5]. Buffalo which is a social animal with strong maternal instinct, the relationship between the calves and dams are closely bonded, and the buffalo calves become more stress when separated from the dam. Experiments on calf behaviour indicated that socially housed calves are less fearful and more socially confident than the isolated calves (Duve *et al.*, 2012) [2]. Despite the economic importance of Surti buffaloes in western India, limited information is available on their neonatal behavioural characteristics and their relationship with growth. Understanding these associations is essential for improving calf management practices. Therefore, the present study was designed to assess sex-associated differences in suckling behaviour and to examine how these traits influence growth during the pre-weaning period.

Materials and Methods

Experiment was conducted at Livestock Research Station, Navsari Agricultural University, Navsari. The research was carried out on 18 Surti Buffalo calves (9 male and 9 female) after calving.

Weight of calves/Test Day weight: Weight of calves was taken on DOC (day of calving) 15th, 30th, 45th, 60th, 75th and 90th day.

$$\text{Average daily gain (g/day)} = \frac{\text{Final weight (Kg)} - \text{Initial weight (Kg)}}{\text{Duration on days}} \times 1000$$

Corresponding Author:**BN Chaudhari**

Department of Livestock
 Production and Management,
 College of Veterinary Science
 and Animal Husbandry,
 Navsari Agricultural
 University, Gujarat, India

Daily intake of milk, roughage and concentrate were recorded as such and dry matter as per schedule. Milk intake calculated by weighing calf before and after suckling. Effect of Letting Down Time: The let-down time (in minutes) was taken as time interval from touching of teat by calf to the first drop of milk drawn in pail. Although milk let-down is primarily a physiological response of the cow after parturition, the behaviour of the calf can influence how quickly this response occurs. To assess the calf's contribution, the number of suckling strokes and the time required for milk let-down were carefully recorded. Biometry of calf such as length of calf, heart girth, paunch girth, height at wither etc, was recorded fortnightly. Data collected during course of experiment was first tabulated using descriptive statistics and analysed by t-test and mean within the group was compared using Duncan multiple range test (DMRT). Data obtained in percentage were analysed using chi-square and for some parameters correlation test was also performed with IBM SPSS trial version software.

Results and Discussion

The present study was undertaken to evaluate the, behavioural patterns, growth performance of Surti buffalo calves.

1. Time to First Suckling

Table 1: Mean $\pm$ S.E of time required for first suckling (min):

Parameter	Male calves = (9)	Female calves = (9)	t-value
DOC	81.22 $\pm$ 5.97	75.22 $\pm$ 5.87	0.563

The result of time required for first suckling have been presented in table 1. The mean value of time required by male calves for first suckling was higher (81.22 $\pm$ 5.97 min) than female calves (75.22 $\pm$ 5.87 min) though the difference not varied significantly. In the present study male calves showed higher activity level as compared to females which might give idea about health status and weight. Similar finding was also reported by Rawat *et al.* (2015) [16] who observed longer suckling time in male calves (216.75 $\pm$ 2.18 min) as compared to female calves (121.00 $\pm$ 2.08 min) especially during first suckling. The reason might be due to high activity, body weight and good health status of male calves. The difference in timing might be due to species difference.

2. Teat-Holding Duration

Table 2: Mean $\pm$ S.E of teat holding time (sec):

Day of observation	Male calves (n = 9)	Female calves (n = 9)	t-value
DOC	410.00 $\pm$ 23.97	466.66 $\pm$ 31.66	-1.719
15 th day	236.66 $\pm$ 18.33	263.33 $\pm$ 21.66	-0.828
30 th day	156.66 $\pm$ 13.01	173.33 $\pm$ 9.71	-0.887
45 th day	143.33 $\pm$ 10.93	166.67 $\pm$ 10.14	-1.359
60 th day	140.00 $\pm$ 8.66	173.33 $\pm$ 9.71	-2.626*
75 th day	100.00 $\pm$ 8.66	123.33 $\pm$ 7.82	-1.792
90 th day	76.66 $\pm$ 7.26	103.33 $\pm$ 7.26	-2.873*
Overall	180.47 $\pm$ 14.23	210.00 $\pm$ 15.71	-3.778**
F-value	63.77**	57.27**	-

The result of effect of sex of calves on time required to hold teats have been presented in table 2. The mean value of time required by male calves to hold the teats was 410.00 $\pm$ 23.97, 236.66 $\pm$ 18.33, 156.66 $\pm$ 13.01, 143.33 $\pm$ 10.93, 140.00 $\pm$ 8.66, 100.00 $\pm$ 8.66 and 76.66 $\pm$ 7.26 seconds on DOC, 15th, 30th, 45th, 60th, 75th and 90th day respectively. Similarly, the time required to hold the teat by female calves was 466.66 $\pm$ 31.66, 263.33 $\pm$ 21.66, 173.33 $\pm$ 9.71, 166.67 $\pm$ 10.14, 173.33 $\pm$ 9.71, 123.33 $\pm$ 7.82 and 103.33 $\pm$ 7.26 seconds on DOC 15th, 30th, 45th, 60th, 75th and 90th day respectively.

The overall time required to hold the teat was significantly higher in female calves (210.00 $\pm$ 15.71sec) as compared to male calves (180.47 $\pm$ 14.23 sec) On 60th and 90th day the time required to hold the teats was significantly lower in male calves than female calves. While comparing within group time required by calves to hold the teats showed decreasing trend from day of calving to 90th day and F-value suggest significant ($p < 0.01$) difference between observations on different days. In the present study, the time required for teat holding was significantly higher in female calves than in male calves, indicating better alertness and overall health status. Moreover, teat-holding duration was markedly greater on the 15th day of age compared to the 30th day. Similar finding was also reported by Singh *et al.* (2016) [7] who observed longer teat holding time in calves up to 15th day observation as compare to 30th day observation.

2. Suckling Duration

Table 3: Mean $\pm$ S.E of time of suckling in calves (min):

Day of observation	Male calves (n = 9)	Female calves (n = 9)	t-value
15 th day	7.22 $\pm$ 0.94	6.44 $\pm$ 0.75	0.754
30 th day	5.38 $\pm$ 0.43	6.27 $\pm$ 0.60	-0.966
45 th day	5.88 $\pm$ 0.94	5.05 $\pm$ 0.60	0.603
60 th day	4.83 $\pm$ 0.80	5.06 $\pm$ 0.26	-0.251
75 th day	4.55 $\pm$ 0.54	4.44 $\pm$ 0.41	0.154
90 th day	2.11 $\pm$ 0.72	2.72 $\pm$ 0.65	-0.796
Overall	5.0 $\pm$ 0.36	5.0 $\pm$ 0.28	0.00
F-value	5.046*	5.611**	-

The result of time of suckling in calves have been presented in table 3. The mean values of time of suckling taken by male calves were 7.22 $\pm$ 0.94, 5.38 $\pm$ 0.43, 5.88 $\pm$ 0.94, 4.83 $\pm$ 0.80, 4.55 $\pm$ 0.54 and 2.11 $\pm$ 0.72 while in female calves it was 6.44 $\pm$ 0.75, 6.27 $\pm$ 0.60, 5.05 $\pm$ 0.60, 5.06 $\pm$ 0.26, 4.44 $\pm$ 0.41 and 2.72 $\pm$ 0.65 on 15th, 30th, 45th, 60th, 75th and 90th day respectively.

The overall time required was almost similar in male and female calves (5.0 $\pm$ 0.36 and 5.0 $\pm$ 0.28 min). The F-value of female calves was highly significant ($p < 0.01$) and in male calves significant at 5% level. Time required to hold the teats was almost similar in case of males on 30th to 75th day and in case of females it was almost similar on (15th to 60th day). Longer suckling time in males as compared to female calves was also recorded by Rawat *et al.* (2015) [16]. The reason behind more time required in male calves might be attributed to activity of male calves and hunger.

3. Number of Strokes for Let-Down

The result of no. of strokes for let-down of milk have been presented in table 4. The mean value of no. of strokes required by male calves for letdown of milk was 12.67 $\pm$ 0.53, 8.44 $\pm$ 0.29, 7.66 $\pm$ 0.41, 6.88 $\pm$ 0.35, 6.44 $\pm$ 0.47,

6.77±0.28 and 5.33±0.17 times on DOC, 15th, 30th, 45th, 60th, 75th and 90th day respectively. Similarly, the no. of strokes required by female calves was 15.78±0.52, 13.78±0.68, 10.67±0.41, 8.22±0.28, 6.33±0.38, 7.55±0.47 and 6.11±0.42 on DOC, 15th, 30th, 45th, 60th, 75th and 90th day respectively. The overall no. of strokes required by female were significantly higher ($p<0.01$) than male calves. While comparing within group, time required by calves to hold the teats showed decreasing trend from DOC to 90th day and F value suggest significant ($p<0.01$) difference between observations on different days. Time required to hold the teats within the male calves were similar on 45th to 75th day. In female calves number of stroke was similar on 60th and 75th day; value of DOC, 15th and 30th day was different from other observations.

The present finding was in close agreement with result of Rawat *et al.* (2015) [16]. Who also reported that male calves (1.86±0.35 times) require lesser stroke for let-down of milk as compare to female (2.81±0.33 times), though number of stroke was less in their finding. The number of strokes made during suckling for let-down of milk was associated with growth rate (Singh *et al.*, 2016) [7].

4. Let-Down Time of Dam

The results of let-down time of milk have been presented in table 5. The mean value of let-down time of milk of the dam for male calves was 40.44±1.69, 36.44±1.81, 33.77±1.35, 33.77±1.35, 31.55±1.69, 31.55±1.81 and 25.77±1.64 and in case of females mean values are 46.66±2.0, 40.00±1.33, 35.11±1.97, 36.44±1.69, 33.33±2.10, 30.66±2.10 and 28.44±1.55 at DOC, 15th, 30th, 45th, 60th, 75th and 90th day respectively

The overall time required by dam of female calves for milk let-down was significantly ($p<0.05$) higher as compared to dam of male calves. The F-value of both male and female was highly significant ($p<0.01$). The mean values of let-down time of milk in male calves within the group were similar on 15th to 75th day. While in case of females the value was almost similar on 15th to 45th day and 30th to 60th day. Values of DOC in female was significantly different from rest of the days. Decreasing trend in let-down time was observed in both the groups from DOC to 90th day. In the present investigation, dams nursing female calves exhibited a significantly longer milk let-down time ($p<0.05$) compared with dams nursing male calves. This variation is likely influenced by differences in calf vitality and the parity status of the dam. In this study the milk let-down time was greater during the early days of lactation compared with later stages. This reduction over time may be attributed to the progressive improvement in the suckling ability of the calves as they matured.

Table 4: Mean ± S.E of number of stroke required for let-down of milk (no. of times):

Day of observation	Male calves (n = 9)	Female calves (n = 9)	t-value
DOC	12.67 ^e ±0.53	15.78 ^e ±0.52	-4.030**
15 th day	8.44 ^d ±0.29	13.78 ^e ±0.68	-8.000**
30 th day	7.66 ^{cd} ±0.41	10.67 ^d ±0.41	-5.427**
45 th day	6.88 ^{bc} ±0.35	8.22 ^c ±0.28	-3.577**
60 th day	6.44 ^b ±0.47	6.33 ^{ab} ±0.38	0.188
75 th day	6.77 ^{bc} ±0.28	7.55 ^{bc} ±0.47	-1.359
90 th day	5.33 ^a ±0.17	6.11 ^a ±0.42	-1.673
Overall	7.74±0.31	9.77±0.47	-6.674**
F-value	40.163**	65.390**	-

Table 5: Mean ± S.E of time of let-down (sec):

Day of observation	Male calves (n = 9)	Female calves (n = 9)	t-value
DOC	40.44 ^e ±1.69	46.66 ^e ±2.00	-2.134
15 th day	36.44 ^{bc} ±1.81	40.00 ^d ±1.33	-1.403
30 th day	33.77 ^b ±1.35	35.11 ^{bcd} ±1.97	-0.5
45 th day	33.77 ^b ±1.35	36.44 ^{cd} ±1.69	-1.032
60 th day	31.55 ^b ±1.69	33.33 ^{abc} ±2.10	-0.883
75 th day	31.55 ^b ±1.81	30.66 ^{ab} ±2.10	0.359
90 th day	25.77 ^a ±1.64	28.44 ^a ±1.55	-1.069
Overall	33.33±0.79	35.80±0.97	-2.615*
F-value	7.733**	10.915**	-

Table 6: Mean ± S.E of body weight of calf (Kg):

Day of observation	Male calves (n = 9)	Female calves (n = 9)	t-value
DOC	25.56 ^a ±1.25	25.63 ^a ±1.39	-0.031
15 th day	33.72 ^b ±1.54	33.73 ^b ±1.35	-0.006
30 th day	41.38 ^c ±1.55	39.21 ^c ±1.55	0.929
45 th day	45.24 ^{cd} ±2.11	43.47 ^{cd} ±1.54	0.645
60 th day	50.75 ^{de} ±2.10	47.99 ^{de} ±1.59	1.207
75 th day	54.90 ^{ef} ±2.34	52.08 ^e ±1.71	1.196
90 th day	59.93 ^f ±2.63	57.38 ^f ±2.14	0.849
Overall	44.50±1.58	42.78±1.41	1.897
F-value	36.70**	44.76**	-

5. Bodyweight Changes

The results of body weight of calves have been presented in table 6. The mean value of body weight of male calves was 25.56±1.25, 33.72±1.54, 41.38±1.55, 45.24±2.11, 50.75±2.10, 54.90±2.34 and 59.93±2.63 and in female mean values was 25.63±1.39, 33.73±1.35, 39.21±1.55, 43.47±1.54, 47.99±1.59, 52.08±1.71 and 57.38±2.14 during DOC, 15th, 30th, 45th, 60th, 75th and 90th day of observation respectively.

Overall mean of body weight of male calves was higher than females though it was not significantly different. The mean values of body weight of females were higher than males on DOC and 15th day though it was not significant. Male and female body weight showed increasing trend from DOC to 90th day. The F-value of both the groups were highly significant ($p<0.01$). While comparing within group body weight was similar on 30th and 45th day in both the group. Body weight of calves on DOC varied significantly with weight of different test day in both the groups.

Similar to this result Eachternkamp *et al.* (1993) [3] reported that birth weight was higher in males as compared to female calves and Thiruvankadan *et al.* (2009) [8] reported that male has higher body weight as compare to female at all age group.

Conclusions

Proper health and well-being of calves depends on adequate amount of high-quality colostrum at birth, sufficient quantities of milk during suckling and adequate feeding after weaning. In buffaloes immediately after calving there is critical period where mother-offspring bond establishes through fast learning (imprinting) using specific cognitive skills. The mean value of time required by male calves for first suckling was higher (81.22±5.97) than female calves (75.22±5.87) though the difference not varied significantly. The overall time required to hold the teat was significantly higher in female calves (210.00±15.71 sec) as compared to male calves (180.47±14.23 sec). On 60th and 90th day also the time required to hold the teats was significantly higher in

female than male calves. Teat holding time was significantly higher for first 15th day as compared to 30th day. The overall time of suckling required was almost similar in male and female calves (5.0 ± 0.36 and 5.0 ± 0.28 min). The overall no. of strokes required for let-down of milk by female were significantly higher ($p < 0.01$) than male calves. The overall time required by dam of female calves for milk let-down was significantly ($p < 0.05$) higher as compared to dam of male calves. Time of letdown of milk in buffalo was significantly ($p < 0.05$) positively correlated with time required in holding teats (0.587), no. of attempt to teat suckling (0.569) and no. of strokes required for let-down (0.669) by calves on the day of calving (DOC); moreover, time of let-down was also significantly ($p < 0.05$) positively correlated on 45th day of observation.

References

1. Corbet JL. The challenging demand for increases in meat and milk production: Enhancing the contributions of grazing livestock. *Asian-Australas J Anim Sci.* 2001;14:1-12.
2. Duve LR, Weary DM, Halekoh U, Jensen MB. The effects of social contact and milk allowance on responses to handling, play, and social behavior in young dairy calves. *J Dairy Sci.* 2012;95:6571-6581.
3. Echternkamp SE. Relationship between placental development and calf birth weight in beef cattle. *Anim Reprod Sci.* 1993;32(1-2):1-13.
4. Farouk MH. Milk production performance and some biochemical blood components in Egyptian buffaloes as affected by seasonal variation. *Egypt J Dairy Sci.* 2012;3(2):105-111.
5. Hafez ESE. *Reproduction in Farm Animals*. 6th ed. Philadelphia: Lea & Febiger; 1992.
6. Rawat NS, Mishra AK, Gaur AK, Baghel KKS. Studies on suckling behaviour pattern of calves in Gir breed of cow; 2015.
7. Singh RN, Nanavati S, Shinde KP, Ahmad LS. The effect of suckling traits on growth rate of calves in Gir cattle. *Int J Agric Sci.* 2016;8(60):3385-3387.
8. Thiruvankadan AK, Panneerselvam, Rajendran R. Non-genetic and genetic factors influencing growth performance in Murrah buffaloes. *S Afr J Anim Sci.* 2009;39(1):102-106.