



Short Communication

Studies on the prevalence and causes of post-partum anestrus in mid-hill sub-humid temperate zone of Kangra district

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Abstract

The study was conducted in Dharer Panchayat and other surrounding villages of Baijnath block (mid-hill sub-humid zone) of District Kangra through various infertility camps. Overall, 212 cows were screened via rectal examination and prevalence of post-partum anestrus was recorded. Prevalence of postpartum anestrus was 34.43 per cent, gestational anestrus/pregnancy was 32.07 per cent and silent estrus was 6.60 per cent. Main factors associated with postpartum anestrus in cows of Dharer Panchayat and other surrounding villages of Baijnath block of Kangra District were poor BCS (less than 2.5;37.50%), under nutrition (28.13%), suckling (18.75%), previous history of dystocia (9.37%) and other factor like metritis, periparturient diseases (6.25%).

Key words: Dairy cows, Mid-hill, Postpartum anestrus, Prevalence, Sub-humid

Among various breeding factors which determine the profitability of dairy sector reproductive performance is of utmost importance. The profitability of dairy sector mainly depends on the production of calves and milk. Calving interval, services per conception and interval to onset of postpartum cyclicity are considered as important criteria to measure farm economy (Shahzad *et al.* 2016). In bovine reproduction, repeat breeding and anestrus are two main reproductive disorders which are responsible for 30-40 per cent culling in cows in India (ICAR report 2002). Postpartum anestrus in dairy cows is a major bottleneck in exploiting full reproduction potential leading to decline in breeding performance in high yielder animals due to increase in number of days open (Aynalem *et al.* 2011). Maintenance of such affected dairy animals for longer period may cause economical losses to farmers (Graves and McLean 2003). It is a multifactorial problem but its occurrence indicates inadequate quality of nutrition, environmental stress

and poor livestock management practices (Kumar *et al.* 2014). Prevention of anestrus is preferable to treatment and can be achieved in parts by maintaining healthy peri-parturient period.

Prevalence of different reproductive conditions

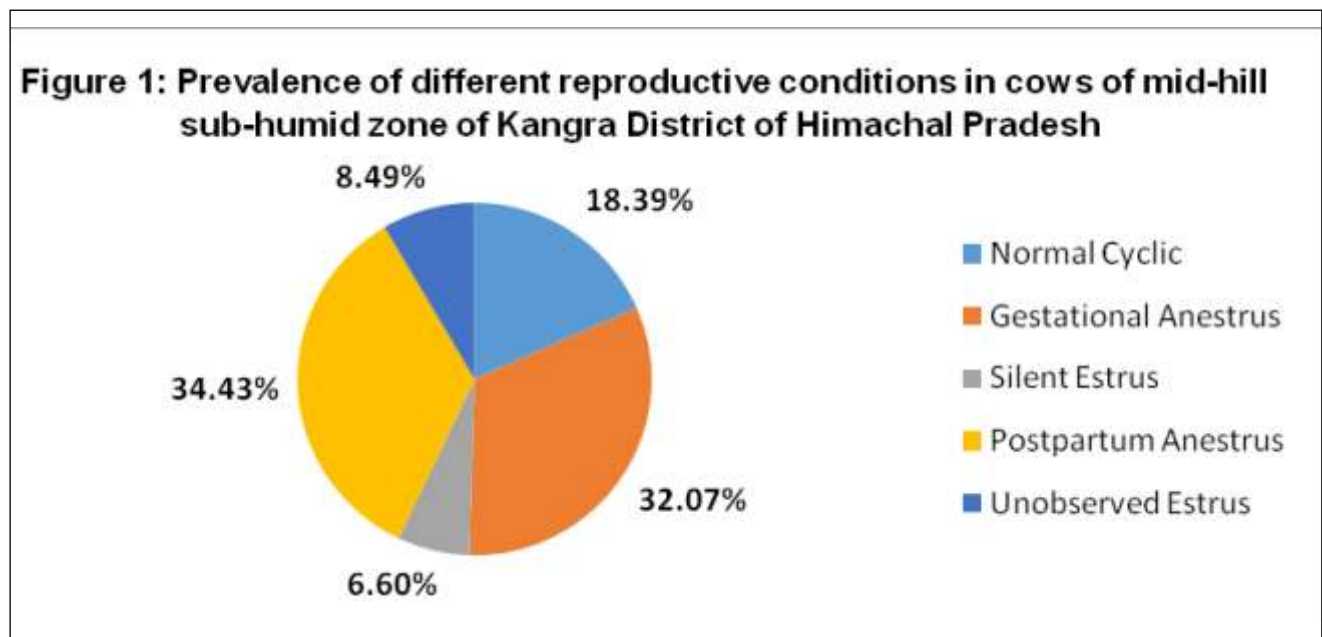
In this study, through various camps organized in Dharer Panchayat and other surrounding villages cows were screened for documentation of various reproductive conditions via per-rectal examination and divided into three main categories: - 1) Normal Cyclic 2) Anestrus (Functional Infertility) 3) Managerial Infertility and prevalence was recorded.

Prevalence of different reproductive conditions in mid-hill sub-humid zone of Kangra District of Himachal Pradesh has been shown in Table 1 and Figure 1.

Per rectal examination of 212 dairy cows revealed that 18.39 per cent (39/212) were normal cyclic, 32.07 per cent (68/212) were in gestational anestrus, 6.60 per cent (14/212) were in sub-estrus/silent estrus and 34.43

Table 1. Prevalence of different reproductive conditions in cows of mid-hill sub-humid zone of Kangra District of Himachal Pradesh

S.No.	Reproductive Condition	(Overall N=212)	
		N	%
1.	Normal Cyclic	39	18.39
	Total	39	18.39
2.	Anestrus (Functional Infertility)		
i.	Physiological Anestrus		
	a) Gestational Anestrus	68	32.07
	Total	68	32.07
ii.	Pathological Anestrus		
	a) Sub-estrus/Silent estrus	14	6.60
	b) Postpartum Anestrus(>90 days)	73	34.43
	Total	87	41.03
3.	Managemental Infertility		
	a) Unobserved estrus	18	8.49
	Total	18	8.49



per cent (73/212) had postpartum anestrus. Almost comparable results of anestrus (33.68%) and silent estrus (5.43%) were recorded in cows of different districts of Himachal Pradesh by Kumar and Singh (2018).

A very high incidence of anestrus was recorded in cows which were 67.68, 65.0, 53.15, 45.97 and 43-

67.11 per cent in West Bengal (Maji and Samanta 2013), Kerala (Kutty and Ramachandran 2003), Madhya Pradesh (Pandit 2004), Maharashtra (Kulkarni *et al.* 2002) and Punjab (Singh *et al.* 2003), respectively. Almost comparable results of 39.01, 31.0 and 29.0 per cent were recorded in cows of Bihar (Singh *et al.* 1981), Kashmir (Bhattacharyya and

Buchoo 2008) and Goa (Chakurkar *et al.* 2008) but comparatively low incidences were recorded in the cows of Gujarat (24.73%; Patel *et al.* 2007) and Tamil Nadu (16.6%; Selvaraju *et al.* 2005).

The prevalence of anestrus may vary in different agro-climatic zones. However, quite variations do exist in terms of its percentage wise occurrence because of breed, sample size, criteria for consideration etc. In the present study, a higher prevalence of postpartum anestrus was reported which might be due to different criteria of consideration i.e. those cows, failed to resume cyclicity within 90 days post parturition. It is difficult to compare prevalence of anestrus of different studies, because of difference in defining postpartum anestrus and method to record prevalence.

Anestrus can occur due to limited energy intake, lower body reserves and postpartum reproductive

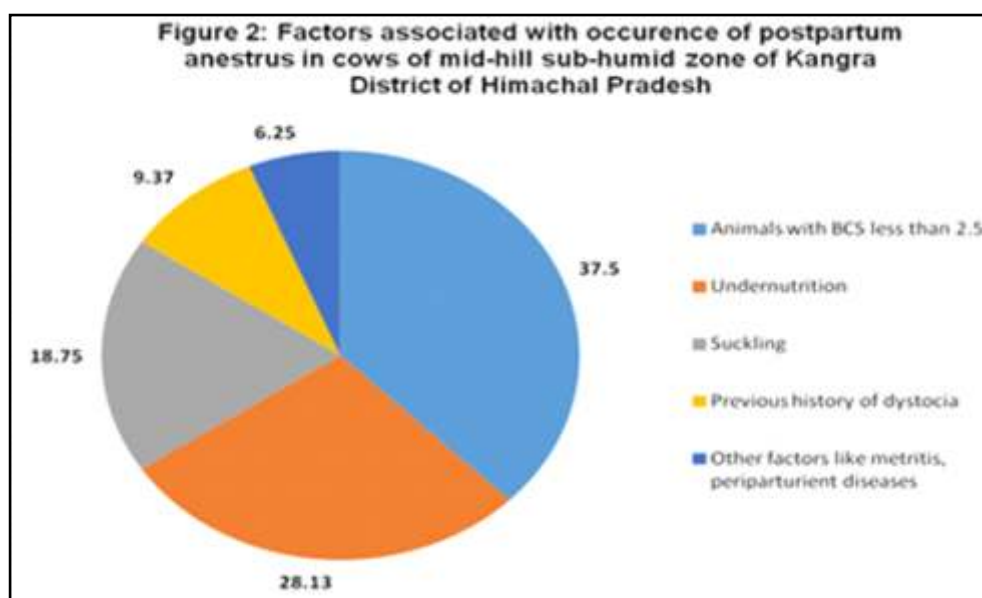
disorders (Virmani *et al.* 2013). Mismanagement of feeding either excess or deficiency of factors like energy, protein, minerals etc. are the reasons of reproductive failure. The weight loss during calving and in lactation extends the postpartum anestrus period (Entwistle 1983). Similarly, other factors like environmental stress (Randel 2005), suckling (Quintansa *et al.* 2009), parasitic infestations (Bruhn *et al.* 2013), parity (Mahdy *et al.* 2001) and periparturient diseases (Opsomer *et al.* 2000) are responsible for causing anestrus in animals.

Factors associated with occurrence of postpartum anestrus

Association of various risk factors with postpartum anestrus in cows examined at various camps organized in mid-hill sub-humid zone of Kangra District of Himachal Pradesh has been shown in Table 2 and Figure 2.

Table 2. Factors associated with occurrence of postpartum anestrus in cows of mid-hill sub-humid zone of Kangra District of Himachal Pradesh

S.No.	Factor	Overall (N=64)	
		N	%
1.	Cows with BCS less than 2.5	24	37.50
2.	Under nutrition	18	28.13
3.	Suckling	12	18.75
4.	Previous history of dystocia	6	9.37
5.	Other factors (metritis, periparturient diseases)	4	6.25
	Total	64	100.00



In present study 37.50 per cent (24/64) examined cows were having poor BCS (< 2.5), 28.13 per cent (18/64) cows were having improper nutritional management, 18.75 per cent (12/64) cows were suckled by calf and 9.37 per cent (6/64) were having previous history of dystocia while 6.25 per cent (4/64) were having conditions like other periparturient diseases and metritis.

Cows with poor and excessive BCS were more likely to remain in prolonged postpartum anestrus than those with optimal BCS. Underfeeding and poor BCS are the major factors contributing to postpartum anestrus which is in concurrence with findings of Kamal *et al.* (2014). An increased partitioning of energy for milk production after calving results in prolonged postpartum anestrus by delay in resumption of follicular activity (Virmani *et al.* 2013). Also inadequate nutrition leads to derangement of hormones secretion pattern in cattle.

Cows with excessive BCS undergo increased mobilization of body fat and accumulate more triglycerol in liver which leads to longer postpartum interval to first estrus (Butler 2003) while cows with poor BCS undergo in negative energy balance thus increase susceptibility for periparturient diseases. Suckling cows had higher risk for true anestrus at

postpartum than non suckling cows. Suckling interfere with hypothalamic release of GnRH thus cause negative feedback effect on pulsatile release of LH, resulting in extended postpartum interval (Montiel and Ahuja 2005). A Higher association between suckling and postpartum anestrus was observed by Kamal *et al.* (2014) in comparison to our study.

The association between previous history of dystocia and postpartum anestrus interval was present in 9.37 per cent which was found to be higher than the findings of Hadush *et al.* (2013) who reported it to be 2.9 per cent. However, El-Wishy (2007) reported no association between abnormal calving and postpartum anestrus interval but a significant association in postpartum anestrus interval and periparturient diseases was reported which is in concurrence with our study.

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Conflict of interest: The authors declare that there is no conflict of interest in this research paper.

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