

Article

Prevalence of obstetrical disorders in dairy cows of northern Bangladesh

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Received: 19 July 2015/Accepted: 10 August 2015/ Published: 30 September 2015

Abstract: The study was conducted to investigate the prevalence of obstetrical disorders (ODs) of 975 dairy cows in relation to genotype, age, parity, housing system, feed quality, rearing system, breeding systems and professional training of owners at Rajshahi, Bangladesh from the period 1 January, 2009 to 31 December, 2009. Extensive survey was conducted in 15 areas of Rajshahi and in each area 65 dairy cows were selected randomly. Individual farmers were interviewed to obtain information about ODs of dairy cows viz; abortion, dystocia, retained placenta, uterine and vaginal prolapse. Out of 975 cows, 117 animals were found to be affected by various ODs showing an overall prevalence of 12.00%. Among the ODs, retained placenta showed the highest prevalence (4.10%) followed by abortion (4.0%), dystocia (2.77%), uterine prolapse (0.66%) and vaginal prolapse (0.51%). The observation of genotype wise ODs in cows revealed that the maximum prevalence was in the Local × Friesian (15.97%), followed by Local (14.68%) and Local × Jersey (9.80%) while the minimum prevalence was in the Local × Sahiwal (5.55%). The age group (>48 months) showed highest prevalence (20.25%) of ODs while the lowest (6.66%) was recorded in < 24 months of age in cows. Parity-wise splitting of the data showed that the maximum prevalence of ODs was in the >5th parity (15.35%) and minimum in the 1st parity (6.15%) of cows. The traditional rearing and farming system revealed highest (17.26%) and lowest (8.51%) prevalence of ODs in cows, respectively. The quality of feed had effect on prevalence of ODs in dairy cows ($P<0.05$). The ODs were also increased in artificial inseminated cows (12.59%) than naturally service groups (11.90%). The training of farmers had significant effect among the non trained and trained groups for the occurrence of ODs in cows. The study revealed relatively low prevalence of reproductive disorders in cows at Rajshahi compare to other regions of Bangladesh, might be due to better management practices adopted by the farmers and efficient veterinary services as well as awareness among farmers.

Keywords: prevalence; obstetrical disorders; dairy cows; Bangladesh

1. Introduction

An obstetrical problem in cows is one of the important hindrances of dairy cattle production that extremely hampered family income source. As successful reproduction is the pre-requisite for the economic outcome of a dairy farm; it is essential to identify the causes of poor fertility in cows as soon as possible. The causes of obstetrical problems are many and complex. A number of factors directly or indirectly involved in the successful cattle production. Obstetrical cases among the reproductive diseases or disorders are directly related with the low cattle production.

Among others, dairy cattle management including type of service practices, uterine infection, oestrus detection, nutritional, hormonal and immune status are directly related with the fertility status of the animals concerned. Defective management practices so alter the reproductive performance with a high incidence of reproductive diseases (Shamsuddin *et.al.*, 1988).

Obstetrical disorders in cows result considerable economic lose to the farmers which reduce reproductive efficiency, lose of production, increase labor, semen and therapy cost, increase replacement costs, force culling and sometimes the adverse effects of systemic illness (Jainuddin and Hafez, 1993). Reproductive disorders can lead to economic losses in terms of reduced fertility, low life time production, longer calving interval and increased expenses on medication in farm animals (Samad *et al.*, 1987). Long calving intervals decrease profits of a cattle dairy herd, negatively influencing productive and reproductive efficiency, resulting in less average milk production, fewer calves/cow-buffalo/year, increased heifer replacement costs due to culling for infertility and increased labor, semen and veterinary bill costs (Maizon *et al.*, 2004; Pryce *et al.*, 2004; Roche, 2006). The reproductive disorders ultimately can cause complete or partial reproductive failure (Chaudhry *et al.*, 1993). Important obstetrical problems encountered in Bangladesh are abortion, retained placenta, vaginal prolapse, uterine prolapse, dystocia, mummified foetus and macerated foetus etc (Samad *et al.*, 1978; Sarder *et al.*, 2010). In Bangladesh fertility problem is one of the most important issues confronting the dairy industry, but the extent and causes are not being properly identified. To the best knowledge, there is no information on ODs in dairy cows of north Bengal districts of Bangladesh. Therefore, the present study is an attempt to record the prevalence of various reproductive disorders in dairy cows in relation to genotype, age, parity, housing system, feed quality, rearing system, breeding systems and training skillness of owners at Rajshahi, Bangladesh.

2. Materials and Methods

2.1. Study area and selection of animals

The present study was conducted to investigate the prevalence of obstetrical disorders (ODs) of 975 dairy cows in Rajshahi, Bangladesh from the period 1 January, 2009 to 31 December, 2009.

2.2. General management

An intensive housing system was maintained for rearing the animals. Some farmers reared the animal in close confinement at the stable. Others tied up the animals with ropes during the night and allowed free movement within certain areas during the day time. There was a concrete or raw floor for the cow to stay during the night in maximum stables. During the day time the animals were reared mostly on the muddy floor. In few farms the animals were confined on concrete floor during both day and night time in all stables with free ventilation system. The roof of most houses was made of tin. Some were of concrete and few were of straw. The farmers supplied different types of feed to their dairy cows. Most of the farmer supplied the concentrate feed viz; anchor bran, mosuri bran, rice polish, rice crust, oil cake, khesari bran, maize crust, maize flour, common salts and also roughages like straw and some fodder. The owner of the farms tried to maintain balanced diet and proper nutrition supply to their animals for getting better performance. But in case of individual raised farms, they failed to maintain proper nutrition supply for their animals because of their financial problem.

2.3. Data collection

A total of 975 owners and/or attendants were interviewed using structured questionnaire. In the survey, information on reproductive health problems as well as management system and particulars related to individual cow such genotype, age, parity, housing system, feed quality, rearing system, breeding systems and professional training of owners were recorded. The various reproductive problems identified were defined and recorded based on the following descriptions/definitions given for each problem. Extensive survey was conducted in 15 areas of Rajshahi and in each area 65 dairy cows were selected randomly. Individual farmers were interviewed to obtain information about ODs of dairy cows viz; abortion, dystocia, retained placenta, uterine and vaginal prolapse.

Abortion: the expulsion of dead fetus or recognizable size before full term of the gestation period.

Dystocia: an abnormal and difficult birth in which the first or specially the second stage of parturition was markedly prolonged and subsequently found impossible for the dam to deliver without artificial aid.

Retained placenta: a lack of expulsion of the fetal membranes with in the first 24 hours after calving.

Uterine prolapse: the coming out of the uterus through the vulva commonly shortly after parturition and hanged out with the inner surface outer most.

Vaginal prolapse: the protrusion of the vagina and some times with the cervix through the vulva.

Two types of breeding were observed in the study area such as natural service and artificial insemination. The farmers were giving anthelmintics to their animals regularly and but vaccination was irregular.

2.4. Statistical analysis

Records of clinical cases and the data were collected directly from the dairy cow's owners by using questionnaires. Diagnosis of reproductive diseases was made on the basis of the history, clinical signs and response to treatment. The data were entered and managed in SPSS program. Descriptive statistics was done to explore the prevalence of ODs and Duncan t- test was performed to determine the level of significance among clinical cases of cows of different private dairy farms at Rajshahi district.

3. Results and Discussion

Out of 975 cows included in the study, 117 animals were found to be affected by various Obstetrical disorders (ODs), showing an overall prevalence of 12.00%. Among all the ODs, retained placenta showed the highest prevalence (4.10%) followed by abortion (4.0%), dystocia (2.77%), uterine prolapse (0.66%) and vaginal prolapse (0.51%) (Table 1). Sarder (2013) reported that 25% animals were suffering from different types of reproductive disorders of which retained foetal membrane constituted (4.5%). Citek *et.al.* (2011) studied that of 5970 calvings, 5714 progressed normally, while in 256 (4.29%) dystocia occurred. Grunert, (1986) observed that retained placenta due to apart from bacterial infection, may also be caused by hormonal and nutritional imbalance, housing system and stress at the time of calving, difficult delivery, premature and induced birth and twinning. Mekonnin *et. al.* (2015) studied that the prevalence rates of reproductive problems recorded in the study area were anestrus (37.8%), repeat-breeding (21.0%), dystocia (11.6%), retained fetal membranes (11.5%), endometritis (6.6 %), abortion (6.4%), prolapsed uterus/vagina (2.9%), stillbirth (2.0%) and freemartin (0.2%). The variation in the incidence of retained placenta may be attributed to variations in predisposing factors to which the animals are subjected to among which include nutritional status and management. The relatively higher prevalence rate of retained placenta in the current study could also be due to dystocia which is an important predisposing factor for occurrence of retained placenta.

The genotype wise occurrence of ODs in cows revealed that the maximum prevalence was recorded in the Local × Friesian (15.97%), followed by Local (14.68%) and Local × Jersey (9.80%) while the minimum occurrence of ODs was observed in the Local × Sahiwal (5.55%) (Figure1). Genotype had significant ($P<0.05$) effect on ODs of dairy cows. The significantly higher prevalence rate of reproductive problems in crossbred animals than indigenous zebu may be due to the fact that European breeds are less adapted to tropical conditions of high temperature and humidity, disease and low feed quality than zebu cattle (Mukasa-Mugerwa, 1989) making them more susceptible than indigenous zebu. Another reason may also be due to the fact that, cross breeds require more elaborated management, feeding and better health care than the indigenous zebu to get better reproductive performance and productivity in the tropics (Tekleye *et al.*, 1991).

The highest prevalence of ODs was recorded in age group of >48 months (20.25%), while the lowest (6.66%) was recorded in < 24 months of age in cows (Figure 2). Parity-wise splitting of the data showed that the maximum occurrence of ODs in cows was observed in the > 5th parity (15.35%) and the minimum prevalence (6.15%) was recorded in the 1st parity (Figure 3). Sarder (2008) reported that the higher the incidence of abortion, vaginal prolapse, uterine prolapse, retained placenta (Islam *et al.*, 2013) and dystocia were higher in >8 years old cows and lower in <4 and 4-6 years old cows. The variation of results might be due to age group, breed, body weight, body condition, managemental factors, environmental factors etc.

Table 1. Prevalence of obstetrical disorders (ODs) in dairy cows of Rajshahi area.

Name of Obstetrical cases	Total number of observation	No. of cases	Percentage (%) of cases on the basis of population	Percentage (%) of cases on the basis of diseases
Abortion	975	39	4.00 ^a	33.33 ^a
Retained Placenta	975	40	4.10 ^a	34.18 ^a
Dystocia	975	27	2.77 ^b	23.07 ^b
Vaginal prolapse	975	5	0.51 ^c	4.27 ^c
Uterine prolapse	975	6	0.62 ^c	5.12 ^c
Grand total		117	12.00	100

The prevalence of ODs due to rearing system of dairy cows of northern region of Bangladesh is presented in Table 3. The ODs were found higher in traditional condition of rearing system (17.26%) and lower in farming condition (8.51%). The rearing system had significant effect ($P<0.05$) on ODs.

The feed quality had significant effect ($P<0.05$) on prevalence of ODs (Figure 4). The greater values (15.00%) of ODs were found in poor quality feed while lesser in excellent (9.71%). The effect of breeding system on ODs is shown in Table 4. The highest value of ODs (12.59%) was found in artificial insemination (AI) and lowest in natural services groups (11.90%). Significantly ($P<0.05$) the highest value of ODs (85.47%) was found in AI and lowest in natural services groups (14.52%). The effect of training taken by farmers on obstetrical cases in dairy cows in Rajshahi region is furnished in Table 5. Significantly highest percentage (9.33%) of animal suffers from ODs in non trained up farmers than the trained up farmers (2.69%).

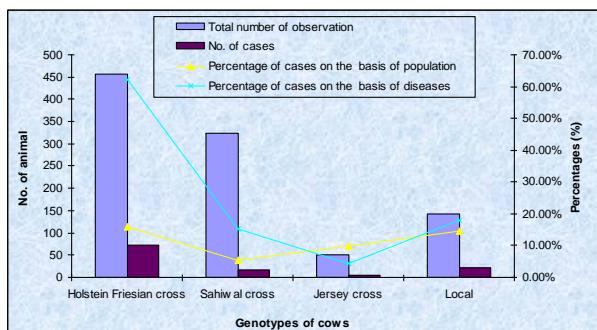


Figure 1. Effect of Genotypes on Obstetrical disorders in dairy cows.

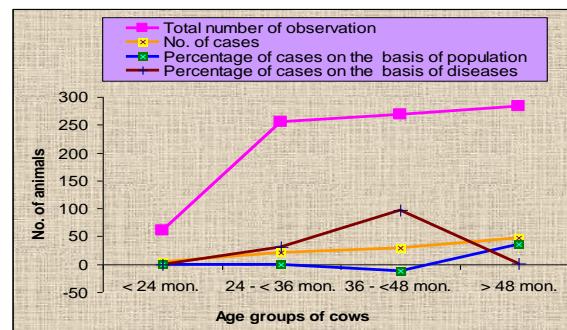


Figure 2. Prevalence of Obstetrical disorders among the age groups in dairy.

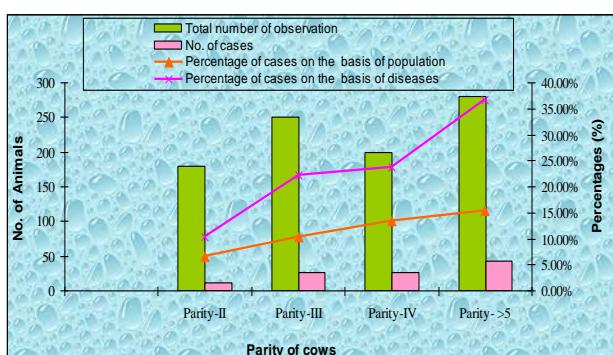


Figure 3. Influence of parity on Obstetrical disorders in dairy cows.

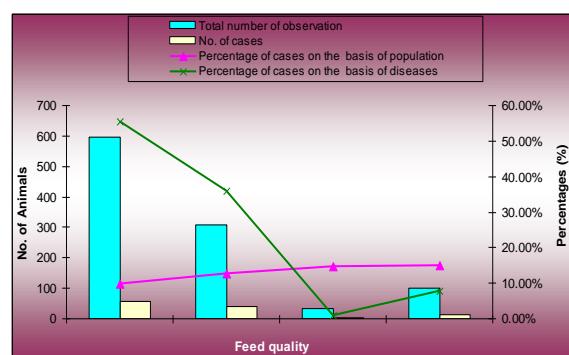


Figure 4. Feed quality affects the prevalence of obstetrical disorders in dairy cows.

Table 3. Effect of rearing system on Obstetrical disorders (ODs) of dairy cows in Rajshahi region.

Rearing system of cows	Total number of observation	No. of cases	Percentage (%) of cases on the basis of population	Percentage (%) of cases on the basis of diseases
Farming condition	587	50	8.51 ^b	42.73 ^b
Traditional condition	388	67	17.26 ^a	57.26 ^a
Grand total	975	117	12.00	100.00

Table 4. Effect of breeding system on Obstetrical disorders (ODs) of dairy cows in Rajshahi region.

Breeding system	Total number of observation	No. of cases	Percentage (%) of cases on the basis of population	Percentage(%) of cases on the basis of diseases
Natural services	135	17	12.59	14.52 ^b
Artificial Insemination (AI)	840	100	11.90	85.47 ^a
Grand total	975	117	12.00%	100.00

Table 5. Effect of training taken by farmers on Obstetrical disorders (ODs) of dairy cows in Rajshahi region.

Status of training	Total number of observation	No. of cases	Percentage(%) of cases on the basis of population	Percentage (%)of cases on the basis of diseases
Trained up	362	26	2.69 ^b	22.22 ^b
No trained up	630	91	9.33 ^a	77.77 ^a
Grand total	975	117	12.00	100.00

Verma and Mishra (1984) also found the incidence of various reproductive disorders i.e. dystocia, retained placenta and uterine prolapse was 10.18 percent. Khan (1994) recorded the relative incidence of retained fetal membranes in cattle 8.66%. Verma *et al.* (2003) recorded the overall incidence of reproductive disorders was at 12.68% which is more close to the present study. Durrani and Kamal (2009) recorded in cattle prevalence of retention of foetal membranes (30.6%), followed by vaginal/uterine prolapse (19.4%), dystocia (11.3%) and abortion (8.1%) was recorded. Kanuya *et al.* (2000) studied cumulative incidence risk reported were abortion 16%, dystocia 1.7%, prolapse 2.5% and retained fetal membranes 4.2%. The present finding, the prevalence of obstetrical diseases are low than the other authors. These differences may be due to variations in management practices and hygienic conditions which differ from time to time and from area to area. The relatively low prevalence of ODs recorded in the present study may be due to the adaptation of improved management practices in the study area such as provision of balanced ration and allowing the calf to suckle.

4. Conclusions

From the present study, the Local × Sahiwal, age of group of <24 months, 1st parity cows are less susceptible for the prevalence of obstetrical diseases. The farming condition, good quality feed, natural services of cows and professional training of owners have also significant effects for the prevalence of ODs in dairy cows. The present study revealed relatively low prevalence of reproductive disorders in cows at Rajshahi compared to other regions of Bangladesh, might be due to better management practices adopted by the farmers and efficient veterinary services as well as awareness among farmers. The farmers should be given attention to the genotype, age, parity of cows, farming system, feed quality, rearing system, professional training of owners of cows to reduce the prevalence of ODs and for more milk and meat production of our national interest.

Conflict of interest

None to declare.

References

- Chaudhry RA, HA Samad, and W Ahmad, 1993. Clinical incidence of reproductive disorders in buffaloes at Faisalabad. FAO/SIDA Follow up Seminar on Animal Reproduction. UAF, Faisalabad. 12-15th Jan.1978.
- Citek J, Eva Hradecka, V Rehout and L Hanusova, 2011. Obstetrical problems and stillbirth in beef cattle. Animal Science Papers and Reports, 29: 109-118.
- Durrani, AZ and N Kamal, 2009. Prevalence of Genital tract problems in clinical cases of various species of Animals. J. Anim. Plant Sci., 19: 160-162.
- Grunert E, 1986. Etiology and pathogenesis of bovine retained placenta. In: Current therapy in Theriogenology. Ed. DA, Morrow. WB Saunders Company. Philadelphia, London, Toronto, Mexico City pp. 237-242.
- Islam MH, MJU Sarder, SS Jahan, M Rahman,M Zahan, MA Kader and KM Hossain, 2013. Retained placenta of dairy cows associated with managemental factors in Rajshahi, Bangladesh, Vet. World, 6:180-184, doi: 10.5455/vetworld.2013.180-184
- Jainudeen MR_h and ESE Hafez, 1993. Cattle and Buffalo. In: Hafez, E.S.E. (Ed.), *Reproduction in Farm Animals*, 6 ed. Lea and Febiger, Philadelphia, pp. 315-329.
- Kanuya NL, BM Kessy, SBP Bittegeko, NSY Mdoe and AAO Aboud, 2000. Suboptimal reproductive performance of dairy cattle kept in smallholder herds in a rural highland area of northern Tanzania. Prev. Vet. Med., 45: 183-192.
- Khan AN, 1994. Prevalence of reproductive disorders in cattle based on clinical data. MSc Thesis, Deptt. Anim Reprod, Univ Agri, Faisalabad, Pakistan.

- Mekonnen AB, CR Harlow, G Gidey, D Tadesse, G Desta, T Gugssa and SC Riley, 2015. Assessment of Reproductive Performance and Problems in Crossbred (Holstein Friesian × Zebu) Dairy Cattle in and Around Mekelle, Tigray, Ethiopia. *Anim. Vet. Sci.*, 3: 94-101. doi: 10.11648/j.avs.20150303.14
- Mukasa-Mugerwa E, 1989. A review of reproductive performance of female *Bos indicus* (Zebu) cattle. ILC., A monograph No. 6. ILCA, Addis Ababa.
- Samad MA, MH Rahman, MM Sen, and TS Islam, 1978. Medicinal treatment and reproductive consequence of placental retention in dairy cows. *Ind. J. D. Sci.*, 42:724-727.
- Sarder MJU, 2008. Occurrence of reproductive disorders in crossbreed cows of Northern Bangladesh. 15th International Congress on Biotechnology in animal Reproduction. 74.
- Sarder MJU, 2011. Current fertility status in cattle of mini-dairy farms. Published by VDM Verlag Dr. Muller, Germany, ISBN-13:978-3-639-32198-2, pp:1-72; <https://www.morebooks.de/store/gb/book/current-fertility-status-in-cattle-mini-dairy-farm>
- Sarder MJU, MIZ Moni and S Akhter, 2010. Prevalence of reproductive disorders of crossbred cows in the Rajshahi District of Bangladesh. *SAARC J. Agri.*, 8:65-75.
- Shamsuddin M, MM Alam and JU Ahmed, 1988. Reproductive disorder of crossbred cows. *Bangladesh Vet. J.*, 22:21-28.
- Tekelye B, OB Kasali and A Tsion, 1991. Reproductive problems in crossbred cattle in central Ethiopia. *Anim. Rep. Sci.*, 26: 41-49.
- Verma HK, G Singh, and SS Sidhu, 2003. Incidence of reproductive disorders of buffaloes in different zones of Punjab State (India). *J Research, Punjab Agric. Univ.*, 40: 79-81.
- Verma RP and RR Mishra, 1984. Incidence of certain reproductive disorders in different breeds of cattle. *Indian Vet. J.*, 61: 169- 170.