



Prevalence of Various Reproductive Disorders and Economic Losses Caused by Genital Prolapse in Buffaloes

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ABSTRACT

The present study was conducted to investigate the prevalence of various reproductive disorders and to estimate the economic losses due to genital prolapse in buffaloes in Sir Shamir area of District Faisalabad, Pakistan. The survey was conducted in 8 villages during the 12 months period from June 2005 to May 2006 and the data from 400 farmers (50 farmers from each village) were collected. The total buffalo population of this area was 7,785, out of which 2,135 (27.42%) animals were included in the study. The overall prevalence of reproductive disorders in buffaloes was recorded as 46.18%. Among all the reproductive disorders, repeat breeding showed the highest prevalence (15.69%), followed by anestrus (9.74%), genital prolapse (7.73%), abortion (5.99%), retained placenta (2.58%), uterine torsion (2.39%) and dystocia (2.06%). The total economic losses due to genital prolapse in buffaloes in eight villages during the period of study were estimated to be Rs. 4,59,500/- Among these, the highest losses were due to mortality of dam (39.17%), followed by milk losses (25.14%), service charges (21.33%) and medicine cost (14.36%). Thus, repeat breeding, anoestrus and genital prolapse seem to be the major reproductive problems in buffaloes in the study area.

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INTRODUCTION

The buffalo (*Bubalus bubalis*) is given the name of "black gold of South Asia" where more than 95% of the buffalo milk is produced (Javaid *et al.*, 2009). This species is also known as the world second most important milk producing animal (McDowell *et al.*, 1995; Bhatti *et al.*, 2009). It plays an important role in the overall economy of Pakistan through contributing milk, meat, hides and draft power for various agricultural operations. According to an estimate, there are about 28.4 million heads of buffaloes in Pakistan (Anonymous, 2006) which provide more than 68 percent of the total milk produced in the country (Bilal *et al.*, 2006).

Reproductive efficiency is the primary factor affecting productivity of a dairy buffalo and is greatly influenced by late attainment of puberty, seasonal breeding, long calving intervals, increased number of services per conception, increased days open, uterine infections and various obstetrical problems (Samad *et al.*, 1987). Previous studies have shown that animal diseases have caused huge economic losses and probably still

continue with more or less the same intensity. The annual losses caused by various livestock diseases in the Punjab province of Pakistan during the year 1977 were estimated to be 21,467 million rupees (Khan *et al.*, 1995). Genital prolapse is an important reproductive disorder in the buffaloes. Its incidence has been shown to be 46% among obstetrical problems in this species (Samad *et al.*, 1987). However, little information is available about the economic losses caused by the genital prolapse in this species.

The present study was carried out to investigate the prevalence of various reproductive disorders and to estimate the economic losses due to genital prolapse in buffaloes in Sir Shamir area of District Faisalabad, Pakistan. The information obtained from this study would be very helpful in formulating future policies for livestock development in this area.

MATERIALS AND METHODS

This study was conducted in the Sir Shamir area of district Faisalabad, Pakistan which is geographically

situated at a latitude 31° 40'N, and longitude 73° 09'E. Total buffalo population in the study area was 7,785, out of which 2,135 (27.42%) animals were included in the study. The retrospective data during 12 months period from June 2005 to May 2006 regarding various reproductive disorders like repeat breeding, anoestrus, genital prolapse, retention of fetal membranes, abortion, uterine torsion and dystocia in buffaloes were collected from eight villages, viz. 81-JB, 82-JB, 83-JB, 84-JB, 85-JB, 86-JB, 87-JB and 88-JB.

A total of 400 farmers, 50 farmers from each village, were interviewed for the prevalence of various reproductive disorders in buffaloes of the area. Moreover, the effect of parity on the prevalence of various disorders was also investigated.

In addition, the economic losses due to genital prolapse in buffaloes were also estimated. The total losses were computed by adding medicine cost, technical service charges, milk losses and mortality losses. The total treatment cost was calculated by multiplying the average treatment charges per prolapsed animal to the total number of cases in each village. The milk losses were estimated according to Bennett *et al.* (1999). The mortality losses were calculated as the number of animals died due to genital prolapse in the study area multiplied by the cash value of dam before death. The data thus collected were analyzed statistically, using Chi-square test.

RESULTS AND DISCUSSION

Among 2,135 buffaloes included in the study, 986 animals were found to be affected by various reproductive disorders, showing an overall prevalence of 46.18 per cent. Various reproductive disorders recorded were repeat breeding, anoestrus, genital prolapse (vaginal and uterine), abortion, retention of fetal membranes, uterine torsion and dystocia.

Among all the reproductive disorders, repeat breeding showed the highest prevalence (15.69%), followed by anoestrus (9.74%), genital prolapse (7.73%) and abortion (5.99%), while the minimum prevalence (2.06%) was recorded for dystocia, the difference being significant ($P < 0.05$; Table 1). However, the difference in the prevalence of retained placenta, uterine torsion and dystocia was non significant (Table 1). The highest prevalence of repeat breeding in buffaloes may be associated with many factors like improper heat detection, wrong time insemination nutritional deficiencies, sub-clinical uterine infections, over-use of breeding bulls and problems with handling of semen.

Based on clinical data, Khan (1994) reported only 6.36% prevalence of reproductive disorders in buffaloes. This difference may be due to different methods of data collection because their findings were based on clinical data, while the results of the present study were computed on the basis of field surveillance.

Table 2 depicts the prevalence of various reproductive disorders in each village. The highest prevalence was recorded in village 83-JB (68.42%), followed by village 88-JB (65.66%), while the lowest prevalence was recorded in village 84-JB (28.17%). However, differences in the prevalence of various

reproductive disorders among eight villages were statistically non significant. These minor differences in the prevalence of various reproductive disorders in buffaloes among different villages can be attributed to variations in management practices which vary from village to villages. It appears that farmers of the village 84-JB are well familiar with the animal husbandry practices compared to those of other villages.

Table 1: Prevalence of various reproductive disorders in buffaloes

Reproductive disorders	No. of cases (reproductive disorders)	Prevalence	%age
Repeat breeding	335	0.157a	15.69
Anoestrus	208	0.097b	9.74
Genital prolapse	165	0.077c	7.73
Abortion	128	0.059d	5.99
Retained placenta	55	0.026e	2.58
Uterine torsion	51	0.023e	2.39
Dystocia	44	0.021e	2.06
Total	986	0.46	46.18

Total buffalo population studied = 2,135; Total buffalo population of the area = 7,785; Values with different letters differ significantly from each other ($P < 0.05$).

Repeat breeding

The most prevalent reproductive disorder in buffaloes in the study area was repeat breeding and its occurrence was 15.69 percent. The highest prevalence of repeat breeding was recorded in village 86-JB (20.28%), while the lowest (10.71%) was recorded in village 85-JB (Table 2). However, statistically, differences in the prevalence of repeat breeding in buffaloes of eight villages were non significant ($P > 0.05$).

The lactation wise occurrence of repeat breeding in buffaloes revealed that the maximum prevalence was recorded in the 2nd lactation (28.35%), followed by 3rd (23.88%) and 4th lactation (18.50%), while the minimum occurrence of repeat breeding was observed in the 5th lactation (12.83%). Thus, after reaching the maximum value in 2nd lactation, the prevalence of repeat breeding decreased with increase in the parity. Shahzada *et al.* (1996) also recorded the overall incidence of repeat breeding as 15.5% in buffaloes, the highest being in animals of the third parity, while the lowest was in heifers. The maximum occurrence of repeat breeding at second lactation may be due to the fact that chances of dystocia are usually high in heifers (although this was not confirmed in this study) and mostly the first delivery of animal is manipulated by the farmers or veterinarians. In this way, chances of induction of infections in uterus are high at that time, which can lead to sub-clinical infection of uterus. Similarly, malpractices adopted by the farmers like inserting the tail of animal in the vagina for milk let down may be one of the factors which lead to uterine infections and ultimately repeat breeding.

Anoestrus

The overall prevalence of anoestrus in buffaloes was found to be 9.74% (Table 2). Based on the clinical data, Samad *et al.* (1987) recorded the prevalence of 35.9 and 30.5% in buffaloes and cows, respectively. The highest

Table 2: Village-wise prevalence of various reproductive disorders in buffaloes (%)

Village No	Repeat breeding	Anestrous	Genital prolapse	Abortion	Retained placenta	Uterine torsion	Dystocia	Affected cases/total animals	Total prevalence (%)
81-JB	20.18 (44)	8.26 (18)	10.09 (22)	11.93 (26)	1.83 (04)	1.38 (03)	3.67 (08)	125/218	57.33
82-JB	17.69 (49)	9.39 (26)	6.86 (19)	6.86 (19)	-----	1.44 (04)	0.36 (01)	118/277	42.59
83-JB	19.47 (37)	15.26 (29)	10.53 (20)	13.69 (26)	4.21 (08)	1.58 (03)	3.69 (07)	130/190	68.42
84-JB	12.67 (54)	5.87 (25)	4.93 (21)	1.64 (07)	0.94 (04)	1.64 (07)	0.47 (02)	120/426	28.17
85-JB	10.71 (39)	8.79 (32)	4.95 (18)	2.19 (08)	3.85 (14)	3.02 (11)	1.65 (06)	128/364	35.16
86-JB	20.28 (43)	13.21 (28)	6.60 (14)	5.19 (11)	3.30 (07)	3.30 (07)	2.36 (05)	115/212	54.24
87-JB	14.8 (37)	8.4 (21)	9.6 (24)	6.8 (17)	4 (10)	2.8 (07)	1.6 (04)	120/250	48.00
88-JB	16.16 (32)	14.65 (29)	13.64 (27)	7.07 (14)	4.04 (08)	4.55 (09)	5.55 (11)	130/198	65.66
Total	15.69 (335)	9.74 (208)	7.73 (165)	5.99 (128)	2.58 (55)	2.39 (51)	2.06 (44)	986/2135	46.18

Values within parentheses are the number of cases for each disorder.

prevalence of anestrous was observed in village 83-JB (15.26%), followed by 88-JB (14.65%) and 86-JB (13.21%), while the lowest prevalence of anoestrous (5.87%) was recorded in village 84-JB (Table 2), the difference was, however, non significant.

Parity-wise splitting of the data showed that the maximum occurrence of anoestrous in buffaloes was observed in the 2nd lactation (35.57%), followed by 3rd (27.40%) and 1st lactation (16.82%), while the minimum prevalence (7.69%) was recorded in the 5th lactation (Table 3). This shows that after the maximum value in 2nd lactation, the prevalence of anoestrous decreased as the parity increased. Generally, chances of anestrous decrease with increase in the parity of the animal, as silent estrus animals are easily detected by milk retention. However, Samad *et al.* (1999) found the highest incidence of anoestrous in heifers, while lowest was in animals in 5th or more lactations. Non availability of proper heat detection methods and short duration of estrous in the summer nights may also be an important factor for high occurrence of anestrous in the buffalo.

Genital prolapse

The overall prevalence of genital prolapse in buffaloes was recorded as 7.73% (Table 1) which is comparable to 9.16% recorded by Chaudhry *et al.* (1978). However, in cows, Khan (1994) reported the prevalence of genital prolapse as low as 1.87%, which might be due to the species differences. It appears that genital prolapse is more prevalent in buffaloes compared to cows.

The highest prevalence of the genital prolapse was recorded in village 88-JB (13.64%), followed by 83-JB (10.53%) and 81-JB (10.09%), while the lowest prevalence was recorded in village 84-JB (4.93%; Table 2). The difference among the villages was statistically non significant.

The lactation wise results showed that the maximum prevalence of genital prolapse was recorded in the 3rd

lactation (29.69%), while the minimum prevalence was found in 1st lactation (6.06%). Thus, genital prolapse showed an increasing trend from the 1st to the 3rd lactation and decreased thereafter. This low prevalence of genital prolapse at 1st lactation may be due to the fact that old animals with loose genitalia are more prone to this problem (Roberts, 1971), and young animals have tight genitalia compared to the older ones. However, the possible reason for the low prevalence of genital prolapse in the 4th and the 5th lactation remains unclear.

Abortion

The overall prevalence of abortion in buffaloes was found to be 5.99%, which is higher than 1.14 and 0.87% recorded by Ibrahim (1992) and Khan (1994), respectively. The highest prevalence was observed in village 83-JB (13.69%), followed by village 81-JB (11.93%) and village 88-JB (7.07%), while the minimum prevalence was recorded in village 84-JB (1.64%; Table 2), the difference was non significant. The lactation wise analysis showed that the minimum prevalence of abortions was found in 1st lactation (7.03%); then it increased as the parity increased, reaching the maximum value at the 4th lactation (32.03%).

Retained placenta

The overall prevalence of retained placenta in buffaloes was observed to be 2.58%. Khan (1994) recorded the relative incidence of retained fetal membranes in cattle and buffaloes as 4.63 and 8.66%, respectively. 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 retained placenta recorded in the present study may be due to the adoption of improved management practices in the study area such as provision of balanced ration and allowing the calf to suckle.

The highest prevalence was recorded in village 83-JB (4.21%), followed by village 88-JB (4.04%), 87-JB (4.00%) and 85-JB (3.84%) and the minimum prevalence was recorded in village 84-JB (0.94%), with no case was seen in village 82-JB (Table 2). The lactation wise results showed that the maximum prevalence of retained placenta was observed in 4th & 5th lactations (27.27% each), followed by 3rd lactation (21.81%). The minimum prevalence of retained placenta was found in the 1st lactation (9.09%).

Uterine torsion

The overall prevalence of uterine torsion in buffaloes was 2.39%. The highest prevalence was observed in village 88-JB (4.55%), followed by village 86-JB (3.30%), village 85-JB (3.02%) and 87-JB (2.8%), while the lowest prevalence was recorded in village 81-JB (1.38%). The values differed numerically only without any statistical difference. The lactation wise analysis showed that the maximum prevalence of uterine torsion was recorded in the 5th lactation (33.33%), followed by the 4th lactation (29.41%) while the minimum prevalence was found in 1st and 2nd lactation (9.80% each). This high prevalence of torsion in the 5th lactation may be associated with the loosening of reproductive organs at older ages (Roberts, 1971).

Dystocia

The overall prevalence of dystocia in buffaloes was found as 2.06%. The highest prevalence was observed in village 88-JB (5.55%), followed by 83-JB (3.69%) and 81-JB (3.67%; Table 1). The lowest prevalence was

recorded in village 82-JB (0.36%). The lactation wise data showed the maximum prevalence of dystocia in the 5th and above lactations (31.82), while the minimum prevalence was observed in the 2nd lactation (13.63%; Table 3). High prevalence of uterine torsion recorded in the 5th and above lactations might have resulted in more cases of dystocia.

Economic losses due to genital prolapse

The total economic losses caused by genital prolapse in buffaloes in the study area during the period from June 2005 to May 2006 were estimated as Rs. 4,59,500 (Table 4). Among these, the highest losses (39.17%) were due to mortality of parturient buffaloes, followed by milk loss (25.14%), service charges (21.32%) and medicine cost (14.36%). Village-wise grouping of the data revealed the highest economic loss due to genital prolapse (Rs. 84,800) occurred in village 87-JB, while the lowest value (Rs. 23,800) was for village 86-JB (Table 4).

Miller and Dorn (1990) reported the costs of dairy diseases to producers in Ohio State USA and recorded as milk loss (20%) and drugs and veterinary services (17%). According to Khan *et al.* (1995), the total losses due to reproductive diseases in buffaloes were 39% of all the losses incurred by various disease conditions in the Punjab province of Pakistan.

Ibrahim (1992) observed the economic losses due to pre-parturient and post parturient prolapses in buffaloes as Rs. 7,200 and Rs. 64,800 respectively, in district Mardan, Pakistan. This difference may be due to differences in disease prevalence and time/period factor for price value of milk and dam and related services.

Table 3: Lactation wise incidence (%) of various reproductive disorders in buffaloes

Disorder	Lactation # I	Lactation # II	Lactation # III	Lactation # IV	Lactation # V
Repeat breeding	16.41 (55)	28.35 (95)	23.88(80)	18.50(62)	12.83(43)
Anoestrus	16.82 (35)	35.57 (74)	27.40(57)	12.5 (26)	7.69 (16)
Genital prolapse	6.06 (10)	16.36 (27)	29.69(49)	27.27 (45)	20.61 (34)
Abortion	7.03 (9)	10.16 (13)	28.90 (37)	32.03 (41)	21.87(28)
Retained placenta	9.09 (5)	14.54 (8)	21.81 (12)	27.27 (15)	27.27 (15)
Uterine torsion	9.8 (05)	9.8 (5)	17.64 (9)	29.41 (15)	33.33 (17)
Dystocia	22.72 (10)	13.63 (6)	15.9 (7)	15.9 (7)	31.81 (14)

Values within parentheses are the number of cases for each disorder.

Table 4: Economic losses due to genital prolapse in buffaloes in various villages during the period from June 2005 to May 2006

Village No.	No of cases of genital prolapse	No. of mortalities	Mortality Loss (Rs.)	Service charges* (Rs.)	Medicine Cost** (Rs.)	Milk loss*** (Rs.)	Total losses (Rs.)
81-JB	22	01	45000	13200	8800	15400	82400
82-JB	19	--	--	11400	7600	13300	32300
83-JB	20	01	45000	12000	8000	14000	79000
84-JB	21	--	--	12600	8400	14700	35700
85-JB	18	01	45000	10800	7200	12600	75600
86-JB	14	--	--	8400	5600	9800	23800
87-JB	24	01	45000	13400	9600	16800	84800
88-JB	27	--	--	16200	10800	18900	45900
Total	165	04	180,000	98,000	66,000	1,15,500	459500
%age			39.17	21.33	14.36	25.14	100.00

*Average service charges per animal during prolapse = Rs. 600/- *Average medicine cost per animal during prolapse = Rs. 400/- *Average milk loss per buffalo during prolapse = Rs. 700/-

Findings of the present study revealed that there was relatively low prevalence of reproductive disorders in buffaloes in Sir Shamir area. This might have been due to excellent management practices adopted by the farmers and efficient veterinary services. Moreover, non government organizations (NGO's) and different milk collection companies might have created awareness among farmers of the area regarding the reproductive health management of their dairy animals.

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