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Article

Prevalence of different reproductive disorders of small ruminants in five upazillas of Mymensingh district

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Abstract: Small ruminants (goat and sheep) are economically important and promising animal resource in Bangladesh. Reproductive disorders of goat and sheep cause the great economic problems. Therefore, the aim of the study was to investigate the prevalence of reproductive disorders in goat and sheep in five upazillas of Mymensingh district. Records of reproductive disorders were collected from official stock book of different Upazillas veterinary hospitals of Mymensingh district during April 2010 to March 2011. Seasonal occurrences of reproductive disorders were also recorded. Descriptive statistical analysis was done to study the prevalence of different reproductive disorders of goat and sheep in five upazillas of Mymensingh district. Out of 4804 clinical cases, a total of 147 reproductive disorders of goat and sheep were screened out from datasheet of official stock book. Among the five upazila, the prevalence of reproductive disorders was higher in Muktagacha (3.35%) and lower in Fulbaria (2.38%). Prevalence of reproductive disorders in all upazila was higher in sheep (4.12%) than goat (2.88%). Prevalence of reproductive disorders of goat was higher in Tarakanda (3.26%) and lower in Fulbaria (2.03%) and the prevalence of reproductive disorders of sheep was higher in Gaforgaon (5.22%) and lower in Haluaghat (3.15%). The major reproductive disorders recorded in goats were dystocia (41.2%), abortion (21.8%), mastitis (21.8%), retained placenta (11.8%) and pyometra (3.4%). Similarly, major reproductive disorders in sheep were dystocia (53.7%), abortion (25%), pyometra (7.1%), mastitis (7.1%) and retained placenta (7.1%). Moreover, seasonal prevalence of reproductive disorders was higher in summer than winter in the species, goat (57.14%) and sheep (12.25%). It was concluded that the most pressing constraint on goat and sheep reproduction in Bangladesh is dystocia, abortion and mastitis. Strategies should be taken to minimize their occurrence.

Keywords: small ruminants; reproductive disorders; prevalence; seasonal

1. Introduction

Livestock is the most prospective sector which addresses the problems of landless, marginal and small-scale farmers and capable of helping in poverty alleviation. This sector contributes about 2.7% of national Gross Domestic Product (GDP) in Bangladesh (Economic Review, 2010). The contribution of livestock sub-sector is 13% earning of total foreign currency in Bangladesh (Alam, 1993). In the livestock sector, small ruminants especially goat and sheep are very important in rural economy and nutrition. Goat is numerically and

economically important and promising animal resources in the developing countries especially in Asia and Africa (Hussain, 1999). At present, there are 56.7 million goats and 1.6 million sheep represents in Bangladesh (FAOSTAT, 2008). The total numbers of goats and sheep were 738 and 201 thousand, respectively in Mymensingh district (DLS, 2010). Goats rank first position in terms of total livestock population in Bangladesh (FAO, 1999). The importance of goat and sheep is strongly emphasized for their versatile production profile and valuable contribution like meat, milk, industrial raw product such as skin, fiber and manure.

Reproductive disorders of goat and sheep are the great economic problems. The reproductive disorders are the major causes of reduced fertility in goat and sheep. Reproductive abnormalities have been described as the largest single cause of loss of livestock production (McDowell, 1972). It has negative effect on meat production since pregnancy and parturition are prerequisite for reproduction. Reproduction of goats has an impact on successful fertility (Sattar and Khan, 1988). Gynaeco-obstetrical disorders like dystocia, abortion, retention of placenta and other miscellaneous abnormalities like metritis, pyometra, vaginitis are the important factors causing economical loss to goat and sheep industry.

The differences in management and production systems and environmental conditions under which goats and sheep are maintained could greatly affect the occurrence of reproductive health problems. Although, major reproductive disorders greatly responsible for high economic loss in dairy goat and sheep, limited research have been done on the prevalence and current treatment practices of the reproductive disease in Mymensingh district. But no significant systemic studies have been done on reproductive disorders of goat and sheep in Mymensingh district. Therefore, the study was designed to investigate the magnitude of major reproductive disorders in goat and sheep in Mymensingh districts.

2. Materials and Methods

2.1. Study area and Animal

It was decided at the outset that the investigation should cover all the 12 upazillas of Mymensingh district but due to some practical problems and logistics in conducting investigation 5 of the 12 upazillas were selected. The total number of sheep and goat population in 5 upazillas (Table-1) and in reciprocal, another 7 upazillas (Table-2) data was collected. So the study was conducted in five upazillas under the district of Mymensingh, located at the north side and 124 kms away from Dhaka city. This area consists of low, flat and fertile land except the hilly regions in northeast and southeast. The mean annual temperature is about 26^0 C with an extreme range between 40-43°C. The averages annual rainfall varies from 1429-4338mm. All the sick animals brought for treatment to the upazillas veterinary hospital were first registered in the official stock book. The description of each registered animal and owner's complaint were recorded. Out of total clinical cases of goat and sheep only reproductive disorders were included in present study.

2.2. Data collection

The investigator personally visited all the selected upazillas, extracted the information on reproductive disorders from the data sheet designed by the hospital authority**.** Therefore, records of clinical cases were collected during April 2010 to March 2011 from official stock book of five Upazillas veterinary hospitals out of 12 upazillas of Mymensingh district viz: Fulbaria, Gaforgoan, Haluaghat, Muktagacha and Tarakanda. Out of 4804 clinical cases of goat and sheep, only 147 reproductive disorders were screened out from the datasheet of official stock book that was used by the hospital authority. The information on the occurrence of disorders related to season of year were also recorded. The following datasheet was used by the hospital authority for keeping record of clinical cases (Annex 1).

2.3. Data analysis

Descriptive statistics was done to study the prevalence of reproductive disorders among total clinical cases of goat and sheep in veterinary hospitals of Mymensingh districts. T-test and chi-square test were perfomed to get the significant value by using SPSS package.

3. Results

A total 147 clinical reproductive cases recorded from different veterinary hospitals in five upazillas of Mymensingh district. Occurrences of reproductive disorders in five upazillas are shown in Table 3. Considering the study area the overall prevalence of reproductive disorders was 3.1%. Among the five upazillas, the prevalence of reproductive disorders was higher in Muktagacha (3.4%) and lower in Fulbaria (2.4%) followed

by 3.3%, 3.3% and 3.1% in Gaforgaon, Tarakanda and Haluaghat, respectively. There was no significant difference the prevalence of reproductive disorders (P>0.05) among the five upazillas (Table 3). Prevalence of reproductive disorders of different upazillas is presented in Table 4. The prevalence of reproductive disorders was higher in sheep (4.1%) than goat (2.9%). In goat among five upazillas, the prevalence of reproductive disorders was higher in Tarakanda (3.3%) and lower in Fulbaria (2.0%) followed by Muktagacha (3.2%), Haluaghat (3.1%) and Gaforgaon (2.9%). In sheep the prevalence of reproductive disorders was higher in Gaforgaon (5.2%) and lower in Haluaghat (3.2%) followed by Fulbaria (4.5%), Muktagacha (4.4%) and Tarakanda (3.4%). There was no significant difference in the prevalence of reproductive disorders of goat and sheep (P>0.05) among the five upazillas (Table 4).

In goat, a total of 119 reproductive disorders were recorded. The overall major clinical conditions observed in goats were higher in dystocia (41.2%), followed by abortion (21.8%), mastitis (21.8%), retained placenta (11.8%) and lower in pyometra (3.4%). There was no significant difference the prevalence of reproductive disorders of goat (P>0.05) among the five upazillas (Table 5). In sheep, a total of 28 reproductive disorders were recorded. Among them the highest percentage was dystocia (53.7%), followed by abortion (25%), pyometra (7.1%), mastitis (7.1%) and retained placenta (7.1%). There was no significant the prevalence of difference reproductive disorders of goat (P>0.05) among the five upazillas (Table 6). Considering the species, prevalence of dystocia (53.7%), abortion (25%) and pyometra (25%) was higher in sheep than goat. However prevalence of retained placenta (11.8%) and mastitis (21.8%) was higher in goat than sheep. In goat, among different reproductive disorders, the prevalence was higher in dystocia (41.2%) and lower in pyometra (3.4%). Prevalence of reproductive disorders, dystocia (53.7%) was higher and pyometra (7.1%), mastitis (7.1%) and pyometra (7.1%) were lower in cases of sheep.

Reproductive disorders of sheep and goat observed during two seasons in Mymensingh district are summarized in Table 7. Over all seasonal prevalence of reproductive disorders was higher in summer than winter in the species goat (57.1%) and sheep (12.3%). Among the different reproductive disorders, prevalence of dystocia was higher in goat (21.8%) and sheep (6.1%). The prevalence of reproductive disorders of goat were 14.3, 12.3, 6.8 and 2.0% in mastitis, abortion, retained placenta and pyometra, respectively in summer season. However, in winter 5.4, 3.4, 2.7 and 0.7% were abortion, mastitis retained placenta and pyometra, respectively. The prevalence of reproductive disorders of sheep were observed 2.7, 1.4, 1.4 and 0.7% were abortion, mastitis, pyometra, and retained placenta, respectively in summer season. However, in winter 4.0, 2.0 and 0.7% dystocia, abortion and retained placenta, respectively. There was no significant difference the prevalence of reproductive disorders (P>0.05) between summer and winter season among the five upazillas with both species.

Table 1. Goat and sheep population in selected five Upazillas in Mymensingh district.

Serial No.	Upazila	Number of goat and sheep		Total
		Goats	Sheep	
01	Fulbaria	75925	795	76720
02	Muktagacha	35380	2220	37600
03	Tarakanda	85100	2740	87840
04	Gaforgaon	65210	652	65862
05	Haluaghat	45200	408	45608
Total		306815	6815	313630

Table 2. Goat and sheep population excluded in seven Upazillas in Mymensingh district.

Serial No.	Upazila	Number of goat and sheep		Total
		Goats	Sheep	
01	Sadar	95120	3950	99070
02	Trisal	50812	4425	55237
03	Nandail	62305	260	62565
04	Iswargonj	66700	3436	70136
05	Gouripur	57500	232	57732
06	Vhaluka	63930	872	64802
07	Dhobaura	35728	110	35838
Total		432095	13285	445380

Source: DLS-report 2010 in Mymensingh.

Table 3. Overall prevalence of reproductive disorders among total clinical cases in five upazillas in Mymensingh.

Serial No.	Upazilla	Clinical cases	Reproductive disorders	Percentage (%)
01	Fulbaria	1093	26	2.4
02	Gaforgaon	1008	33	3.3
03	Haluaghat	706	22	3.1
04	Muktagacha	805	27	3.4
05	Tarakanda	1192	39	3.3
Total		4804	147	3.1
P value		0.998		
Significant level			Non Significant (P>0.05)	

Table 4. Prevalence of reproductive disorders in goat and sheep among total clinical cases during a year.

Upazila	Goat			Sheep		
	Clinical cases	Reproductive disorders	%	Clinical cases	Reproductive disorders	%
Fulbaria	937	19	2.0	156	7	4.5
Gaforgaon	874	26	2.9	134	7	5.2
Haluaghat	579	18	3.1	127	4	3.2
Muktagacha	692	22	3.2	113	5	4.4
Tarakanda	1043	34	3.3	149	5	3.4
Total	4125	119	2.9	679	28	4.1
P value				0.075		
Significant level				Non Significant (P>0.05)		

Table 5. Reproductive disorders of goats in Mymensingh district.

Upazila	Dystocia	Abortion	Mastitis	Pyometra	Retained placenta	Total
Fulbaria	8	5	4	0	2	19
Gaforgaon	10	4	7	2	3	26
Haluaghat	5	6	4	1	2	18
Muktagacha	9	5	3	1	4	22
Tarakanda	17	6	8	0	3	34
Total	49 (41.2%)	26 (21.8%)	26 (21.8%)	4 (3.4%)	14 (11.8%)	119 (100%)
P value		0.850				
Significant level		Non Significant (P>0.05)				

Table 6. Reproductive disorders of sheep in Mymensingh district.

Upazila	Dystocia	Abortion	Mastitis	Pyometra	Retained placenta	Total
Fulbaria	5	1	0	1	0	7
Gaforgaon	4	3	0	0	0	7
Haluaghat	3	1	0	o	0	4
Muktagacha	1	1	2	0	1	5
Tarakanda	2	1	0	1	1	5
Total	15 (53.7%)	7 (25%)	2 (7.1%)	2 (7.1%)	2 (7.1%)	28 (100%)
P value		0.843				
Significant level		Non Significant (P>0.05)				

Table 7. Reproductive disorders of sheep and goat observed during two seasons in Mymensingh district.

Diseases	Goats		Sheep		Total
	Summer	Winter	Summer	Winter	
Dystocia	21.8% (32)	11.6%(17)	6.1%(9)	4.0%(6)	43.5%(64)
Abortion	12.3%(18)	5.4%(8)	2.7%(4)	2.0%(3)	22.5%(33)
Mastitis	14.3%(21)	3.4%(5)	1.4%(2)	0%(0)	19.1%(28)
Retained Placenta	6.8%(10)	2.7%(4)	0.7%(1)	0.7%(1)	10.9%(16)
Pyometra	2.0%(3)	0.7%(1)	1.4%(2)	0%(0)	4.1%(6)
Total	57.1%(84)	23.4%(35)	12.3%(18)	6.8%(10)	100%(147)
P value		0.852			
Significant level		Non Significant (P>0.05)			

4. Discussion

Considering the study area, overall prevalence of reproductive disorders was 3.1%. Among the five upazillas, the prevalence of reproductive disorders was higher in Muktagacha (3.4%) and lower in Fulbaria (2.4%).

The prevalence rate of dystocia was 41% in goats and 54% in sheep in the present study, which is higher than that observed by Srivastava *et al.,* (1985) who reported occurance of dystocia 3.2% in local goat and 1.9% in Angora. In another study, Majeed and Taha (1989) reported occurrence 52.9% fetal and 47.1% maternal dystocia. In a recent study Câmara *et al*., (2009) have observed higher prevalence of dystocia of sheep occurred in rainy season (about 61.7%) and reported a major predominance of maternal dystocia (71.6%) over fetal dystocia (29.4%) with higher prevalence in primiparous. However, dystocia is influenced by factors such as, age and parity as well as breed of the kids.

The prevalence of retained placenta was 12% in goats and 7% in sheep in the present study. But this is very lower than that reported in Yankasa sheep (77.3%) and Red Sokoto goats (95.7%) (Neils *et al.,* 2009). In comparison, Rahman *et al.,* (1977) and Fthenaki *et al.,* (2000) stated that the prevalence of retained placenta was (2.2%) and (1.5%) of goat.

Among reproductive disorders the prevalence of pyometra was 3% in goats and 7% in sheep in present study. This result is slightly higher than that of Ahmed (1993) who reported 1.4% occurrence of pyometra in goat an abattoir survey and lower than the finding of Neils *et al.,* (2009) who have observed 100% and 81.8% pyometra in Yankasa sheep and Red Sokoto goats. Whereas Karadaş and Timurkaan (2001) have observed the prevalence of pyometra 0.1% cases of sheep that are lower than the current finding.

The prevalence of abortion was 22% in goats and 25% in sheep in this present study. Recently, Ahmed *et al*., (2008) have reported 35.6% and 43.7% incidence of abortion of sheep and goats.

We observed higher prevalence of reproductive disorders in summer than winter in both goat (57.1%) and sheep (12.3%). It may be due to high environmental temperature in summer season which created stress condition on animal. High temperature also favorers the growth of pathogenic bacteria and other microorganisms. As a result, immunity of animal felt down and then pathogenic microorganisms multiply easily.

5. Conclusions

It was concluded that the most pressing constraint on goat and sheep reproduction in Bangladesh is dystocia, abortion and mastitis. The reproductive disorders are the major causes of reduced fertility in goat and sheep. Therefore, Gynaeco-obstetrical disorders like dystocia, abortion, retained placenta, vaginitis and other miscellaneous abnormalities like pyometra and metritis are the important factors causing great economical loss to goat and sheep industry. Increased production of goat and sheep meat, skin, goat's milk and sheep wool are deeply related to the management of the reproductive disorders. Therefore strategies should be taken to minimize their occurrence.

Conflict of interest

None to declare.

References

Ahmed JU, 1993. Incidents of gynaeco-obstetrical disorders in Black Bengal goats. Bangladesh Agriculture University Research Progress, 7: 499-505.

Ahmed YF, SM Sokkar, HM Desouky and AH Soror, 2008. Abortion due to Toxoplasmosis in small ruminants. Global Veterinaria, 2: 337-342.

Alam J, 1993. The sector for more investment in Bangladesh. Asian Livestock, 7: 77-78.

Câmara ACL, JAB Afonso , AC Dantas , JA Guimarães, NA Costa, MI Souza and CL Mendonça, 2009. Analysis of factors related to 60 dystocia cases in ewes in the Agreste and semiarid region of Pernambuco, Northeastern Brazil. Cienc. Rural, 39: 2458-2463.

DLS, 2010. An Annual report. Livestock and poultry development activities. Goverment of Bangladesh, Dhaka.

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.

FAO (Food and Agricultural Organization of the United Nations), 1999. Production Year Book. Rome, Italy, 53: 213-219.

FAOSTAT, 2008. http://faostat.fao.org/default.aspx.

Fthenaki GC, LS Leontides, GS Amiridis and P Saratsis, 2000. Incidence risk and clinical features of retention of foetal membranes in ewes in 28 flocks in southern Greece. Prev. Vet. Med., 43: 85-90.

Hussain SS, 1999. Sustainable genetic improvment of economic traits of Black Bengal goats through selective and cross breeding. Bangladesh Agricultural University Research Progress, 10**:** 72-80.

Karadaş E and N Timurkaan, 2001. Pathomorphologic Investigations on the Genital System of Ewes II.Uterus, Cervix and Vagina. Turk. J. Vet. Anim. Sci., 25: 27-37.

Maisi P, 1990. Milk NAGase, CMT and antitrypsin as indicators of caprine subclinical mastitis infections. Small Ruminant Res., 3: 493–501.

Majeed AF and MD Taha, 1989. Dystocia in local goats in Iraq. Small Ruminant Res., 2: 375-301.

McDowell RE, 1972. Improvement of livestock production in warm climates 3rd (Ed.)W.H. Freeman and Company, San Fransisco.

Neils JS, PA Abdu and AKB Sackey, 2009. Some reproductive disorders of the indigenous sheep and goats in Zaria, northern Nigeria. Nigerian Vet. J., 30: 46-50.

Rahman A, A Hossain, MU Ahmed and MM Sen, 1977. Studies on some reproductive performance and biometry of the female genital tract of Black Bengal goat. Indian J. Anim. Sci., 47: 724-725.

Sattar A and MZ Khan, 1988. Incidence and pathology of ovarian diseases of goats. Pakistan Vet. J., 3: 18-21.

Srivastava AK, VK Patil and BK More, 1985. Incidences of various disorders in local, angora crossbreed goats. Indian Vet. J., 62: 935 - 939.