

**Retrospective survey of cases of reproductive diseases and disorders in animals presented for veterinary care at the Senator Ali Sheriff Veterinary Hospital, Maiduguri and State Veterinary Clinic Damaturu, Nigeria from 2010 to 2022**

**Rahmatu I. Ali <sup>1\*</sup>, Suleiman O. Asuku <sup>1</sup>, Abdulhamid Abba <sup>2</sup>, Abdulrahman I. Adamu <sup>3</sup>,  
Isa M. Alkali <sup>1</sup> and Adamu Ali <sup>4</sup>**

<sup>1</sup>Department of Theriogenology, Faculty of Veterinary Medicine, University of Maiduguri, Nigeria.

<sup>2</sup>Veterinary Teaching Hospital, University of Maiduguri, Nigeria.

<sup>3</sup>Department of Public Health, Faculty of Veterinary Medicine, University of Maiduguri, Nigeria.

<sup>4</sup>Senator Ali Sheriff Veterinary Hospital, Maiduguri, Nigeria.

=====

**Abstract**

This study investigated the occurrence of reproductive diseases and disorders (RDD) in animals presented for veterinary care at the Senator Ali Sheriff Veterinary Hospital Maiduguri (SASVHM) and State Veterinary Clinic Damaturu (SVCD), Nigeria from 2010 to 2022. A total of 12,147 cases were presented at the SASVHM, while a total of 19,481 cases were presented at the SVCD during the study period. 1081 (8.9%) of the 12,147 cases presented at SASVHM were RDD, while 2033 (10.4%) of the 19,481 cases presented at SVCD were RDD. Out of the 1081 RDD cases presented at the SASVHM, 106 (9.8%) were in males, while 975 (90.2%) were in females. At SVCD, out of the 2033 RDD cases, 215 (10.6%) were in males, while 1818 (89.4%) were in females. There was significantly ( $p < 0.05$ ) higher number of cases of RDD in females than in males in both hospitals. Pregnancy toxemia, dystocia, mastitis and retained placenta were the most frequent RDD in females in both SASVHM and SVCD, while orchitis, brucellosis, phimosis and paraphimosis were the most frequent RDD recorded in males in both hospitals. The occurrence of RDD was highest in caprine species, followed by ovine, and then the bovine and equine species. Cases of RDD occurred more frequently in the dry season than rainy season in females at both SASVHM and SVCD. In males, RDD cases were more frequent in rainy season at SASVHM, but were more frequent in dry season at SVCD. It was concluded that RDD accounted for 8.9% of the total number of cases presented for veterinary care at SASVHM and 10.4% of all cases presented at SVCD between the years 2010 to 2022, and that the most frequently recorded RDD in both hospitals/clinics were pregnancy toxemia and dystocia in females, and orchitis and brucellosis in males.

**Keywords:** Retrospective study, Reproductive diseases and disorders, Veterinary Hospital/Clinic, Maiduguri, Damaturu, Nigeria.

---

**\*Correspondence:** Rahmatu I. Ali; E-mail: [rahmatu44@unimaid.edu.ng](mailto:rahmatu44@unimaid.edu.ng) Phone: 2348034059615

**Article History:** Initial submission received: July 13, 2023; Final revised form received: November 12, 2023;

Accepted for publication: November 20, 2023; Published: December 05, 2023.

## Introduction

Livestock production is dependent majorly on the reproductive performance of animals and factors such as diseases, nutritional inadequacies and environmental factors that constrain livestock production or decrease reproductive performance (Umaru *et al.*, 2009). Diseases and poor animal health remain a constraint to livestock productivity, and ranks as one of the most important cause of animal production losses in Nigeria. Diseases and disorders that affect the organs of reproductive system in animals cause heavy economic losses by adversely affecting the ability of the animals to reproduce and by inducing embryonic/foetal mortality (Alam *et al.*, 2016). Analysis of hospital/clinic case records commonly give a comprehensive idea about the disease problems in a locality (Sarker *et al.*, 2015), and provides information on disease patterns and trends, which could be used in formulation of management policies (Waziri *et al.*, 2006). The retrospective study of the occurrence of animal diseases is a rapid and low-cost means of investigating disease trends and strategizing to control them (Abiola *et al.*, 2016).

To a very large extent, livestock husbandry serve as source of employment to an appreciable number of people, such as animal herders, feed millers and butchers, thereby generating wealth and as such contributing to the economy of the nation. Specifically for rural dwellers, livestock are very important, as most rural dwellers rely solely on the production turnover from these animals (Wahab *et al.*, 2019). Diseases remain one of the major threats to the livestock industry (MacRae *et al.*, 2005), because of its negative effect through morbidities, mortalities and abortions or through, adverse effects on quality of output and the cost of time and money in management of the diseases (Singh and Prasad, 2008).

A serious health problem that accounts for major economic losses in the livestock

industry is infertility, which may be due to infectious or non-infectious causes, and is a common reason for culling farm animals (Waziri *et al.*, 2006). There had been several earlier reports on the occurrence of reproductive diseases and disorders in veterinary hospitals and clinics across the country. Wahab *et al.* (2019) reported that reproductive conditions accounted for 3.1% of overall recorded cases in small ruminants in the State Veterinary Hospital in Ibadan Nigeria and was one of the leading health problems of small ruminants. Umaru *et al.* (2009) reported in their study in Sokoto, Nigeria that reproductive disease conditions were more frequent in sheep, and the female sex was more vulnerable, with dystocia being the most prevalent reproductive disorder encountered within the period of their study. Waziri *et al.* (2006) reported that reproductive cases constitute 4.07% of total number of recorded cases handled in Maiduguri Veterinary Clinic, Nigeria; being more common in small ruminants and the females, and with high recorded cases in the dry season. Peter *et al.* (2014), in their ten year retrospective study in Maiduguri Veterinary Clinic reported that reproductive disorders were more prevalent in females than in male small ruminants but on the contrary, and that higher prevalence were recorded during the rainy season between April and September.

Although clinical case records are available in the State Veterinary Clinic Damaturu (SVCD), there is no published information in available literature on retrospective studies of cases of reproductive disease and disorders (RDD) presented and handled in the clinic. The need therefore arose for a retrospective study on the occurrence of RDD at the State Veterinary Clinic Damaturu (SVCD) and Senator Ali Sheriff Veterinary Hospital Maiduguri (SASVHM) Nigeria. We believe that the data generated would inform all on the recent picture of patterns/trends of disease occurrence in this locality, and will be useful for epidemiological

surveillance in addition to formulation of policies towards proper intervention for disease control. The aim of this study, therefore, was to evaluate the occurrence of RDD in animals presented and handled in Senator Ali Sheriff Veterinary Hospital Maiduguri and State Veterinary Clinic Damaturu, Nigeria between the years 2010 – 2022.

### Materials and Methods

**Study area:** The study was conducted in Senator Ali Sheriff Veterinary Hospital, Maiduguri (SASVHM) and State Veterinary Clinic, Damaturu (SVCD), within the state capitals of Borno and Yobe State, respectively, North-Eastern region of Nigeria. Maiduguri is located between latitude 11° and 50° north and longitude 13° and 36° east, with the annual rainfall average of 320 mm, humidity of about 49% and evaporation of 203 mm per year, the annual temperature average is 35.4 °C (Mayom and Mohammed, 2014). Damaturu is located between latitude 11° 39' 30 – 11° 47' 00 N and 11° 54' 00 – 12° 02' 00 E, the annual rainfall and temperature range is 275 mm and 35 – 40 °C respectively (Muhammed *et al.*, 2014). Both areas experience rainfall between July and September and dry season extends from October to June (Babagana *et al.*, 2019).

**Methodology:** A retrospective cohort analyses of cases of reproductive diseases and disorders (RDD) was done using 12 year data collected at the SASVHM and SVCD. The retrospective data were collected from the register books and case files at both SASVHM and SVCD for a period spanning 12 years, from January 2010 to December 2022. The data were subjected to analysis to determine the occurrence of specific RDD, sex based and seasonal patterns of distribution of RDD.

**Data analysis:** All data collected were analyzed using Chi-square and Fisher’s exact test and results were presented in frequencies and percentages using tables and figures. GraphPad Instat® software (version 2.0) was used for the analysis, and P-values less than 0.05 were considered statistically significant.

### Results

During the 12-year survey period, a total of 12,147 cases were presented at the SASVHM, while a total of 19,481 cases were presented at the SVCD. The number of cases of RDD presented at SASVHM during the study period was 1081 (8.9%), while the number of RDD presented at SVCD was 2033 (10.4%) [Table 1]. The occurrence of RDD at SVCD was significantly ( $p < 0.05$ ) higher than the occurrence recorded at SASVHM (Table 1).

**Table 1:** Occurrence of reproductive disorders and diseases (RDD) in animals presented for veterinary care at the Senator Ali Sheriff Veterinary Hospital Maiduguri (SASVHM) and State Veterinary Clinic Damaturu (SVCD), between 2010 and 2022.

Case distribution	Occurrence at SASVHM	Occurrence in SVCD	Total, with % in bracket
Number of cases of RDD, with percentage in brackets.	1081 (8.9%)	2033 (10.4%)	3114 (9.8%)
Number of cases that are not RDD, with percentage in brackets.	11066 (91.1%)	17448 (89.6%)	28514 (90.2%)
Overall total number of cases presented.	12147	19481	31628

The case distribution based on sex showed that at SASVHM, out of the 1081 RDD cases, 106 (9.8%) were in males, while 975 (90.2%) were in females; but at SVCD, 215 out of the 2033 (10.6%) cases were in males while 1818 out of the 2033 cases at SVCD (89.4%) were in

females (Table 2). There was significantly higher occurrence of RDD in females than in males, but there was no significant ( $p > 0.05$ ) difference in sex based distribution of occurrence in the two hospitals (Table 2).

**Table 2:** Sex based distribution of cases of reproductive diseases and disorders (RDD) at the Senator Ali Sheriff Veterinary Hospital, Maiduguri (SASVHM) and State Veterinary Clinic Damaturu (SVCD), between 2010 and 2022.

Case distribution based on sex.	Occurrence at SASVHM.	Occurrence at SVCD.	Total number of RDD, with % in bracket.
Number of male cases of RDD, with percentage in brackets.	106 (9.8%)	215 (10.6%)	321 (10.3%)
Number of female cases of RDD, with percentage in brackets.	975 (90.2%)	1818 (89.4%)	2793 (89.7%)
Total number of RDD (both sexes).	1081	2033	3114

**Table 3:** Most frequently encountered reproductive disorders and diseases in animals presented for veterinary care at the Senator Ali Sheriff Veterinary Hospital, Maiduguri (SASVHM) and State Veterinary Clinic, Damaturu (SVCD), 2010 – 2022.

Most Frequently encountered RDD	Occurrence in SASVHM		Occurrence in SVCD		Total
	Rainy season	Dry season	Rainy season	Dry season	
RDD of Females					
Pregnancy toxemia	119	194	76	111	500
Dystocia	62	85	117	215	479
Mastitis	43	51	121	157	372
Retained placenta	30	37	111	150	328
Metritis	5	4	94	119	222
Post parturient paresis	47	70	28	32	177
RDD of Males					
Orchitis	34	21	30	36	121
Brucellosis	21	18	22	24	85
Phimosis	8	11	15	15	49
Paraphimosis	6	8	11	16	41

The most frequently encountered RDD in females in both hospitals were pregnancy toxemia, followed by dystocia, then followed by mastitis, retained placenta and post-parturient paresis, while in males in both hospitals the most frequently encountered RDD were orchitis, followed by brucellosis, then followed by phimosis and paraphimosis (Table 3). When specific cases of RDD are considered for the individual hospitals across the seasons for females at the SASVHM, pregnancy toxemia, followed by dystocia, post-parturient paresis and mastitis were the most frequent RDD while uterine torsion,

foetal maceration, metritis and vulvo-vaginitis had the lowest frequency of occurrence (Table 4). In SASVHM, the overall seasonal occurrence of RDD in females was significantly ( $p < 0.05$ ) higher in dry season than in rainy season (Table 4). For male reproductive disorders at the SASVHM, the frequency of occurrence from the highest to the lowest was as follows: Orchitis > phimosis > paraphimosis > brucellosis > transmissible venereal tumour, and the occurrence of RDD in males at SASVHM was significantly ( $p < 0.05$ ) higher in the rainy and the dry season (Table 5).

**Table 4.** Distribution of specific cases of reproductive disorders and diseases (RDD) in female animals presented for veterinary care at the Senator Ali Sheriff Veterinary Hospital Maiduguri (SASVHM), Borno State, Nigeria, 2010 – 2022.

RDD in Females	Frequency during the seasons, with percentage in brackets		Total
	Rainy season	Dry season	
Pregnancy toxemia	119 (29.6%)	194 (33.9%)	313 (32.1%)
Dystocia	62 (15.4%)	85 (14.8%)	147 (15.1%)
Post parturient paresis	47 (11.7%)	70 (12.2%)	117 (12.0%)
Mastitis	43 (10.7%)	51 (8.9%)	94 (9.6%)
Retained placenta	30 (7.5%)	37 (6.5%)	67 (6.9%)
Uterine prolapsed	16 (4.0%)	22 (3.8%)	38 (3.9%)
Vagina prolapsed	15 (3.7%)	22 (3.8%)	37 (3.8%)
Abortion	11 (2.7%)	20 (3.5%)	31 (3.2%)
Brucellosis	15 (3.7%)	13 (2.3%)	28 (2.9%)
Agalactia	10 (2.5%)	17 (3.0%)	27 (2.8%)
Still birth	7 (1.7%)	11 (1.9%)	18 (1.9%)
Post parturient haemorrhage	4 (1.0%)	7 (1.2%)	11 (1.1%)
Fetal monster	5 (1.2%)	6 (1.0%)	11 (1.1%)
Vulvo-vaginitis	5 (1.2%)	4 (0.7%)	9 (0.9%)
Metritis	5 (1.2%)	4 (0.7%)	9 (0.9%)
Foetal maceration	4 (1.0%)	5 (0.9%)	9 (0.9%)
Uterine torsion	4 (1.0%)	5 (0.9%)	9 (0.9%)
<b>Total</b>	<b>402 (41.2%)<sup>a</sup></b>	<b>573 (58.8%)<sup>b</sup></b>	<b>975</b>

<sup>a, b</sup>, Different superscript on the last (Total) row indicates significant ( $p < 0.05$ ) difference between the occurrence in rainy and dry seasons.

**Table 5.** Distribution of specific cases of reproductive disorders and diseases (RDD) in male animals presented for veterinary care at the Senator Ali Sheriff Veterinary Hospital Maiduguri (SASVHM), Borno State, Nigeria, 2010 – 2022.

RDD in Males	Frequency during the seasons, with percentage in brackets		Total
	Rainy season	Dry season	
Orchitis	34 (58.6%)	21 (43.8%)	55 (51.9%)
Phimosis	8 (13.8%)	11 (22.9%)	19 (17.9%)
Paraphimosis	6 (10.3%)	8 (16.7%)	14 (13.2%)
Brucellosis	6 (10.3%)	5 (10.4%)	11 (10.4%)
Transmissible venereal tumor	4 (6.9%)	3 (6.3%)	7(6.6%)
<b>Total</b>	<b>58 (54.7%)<sup>a</sup></b>	<b>48 (45.3%)<sup>b</sup></b>	<b>106</b>

<sup>a, b</sup>, Different superscript on the last (Total) row indicates significant ( $p < 0.05$ ) difference between the occurrence in rainy and dry seasons.

At SVCD, the top four most frequently occurring female RDD were dystocia, followed by mastitis, then retained placenta and metritis, while the RDD with the lowest frequency of occurrence in females were foetal monsters, foetal maceration and vaginal laceration (Table 6). The overall occurrence of RDD in females at SVCD was significantly ( $p < 0.05$ ) higher in the dry season than during the rainy season (Table 6). Also at SVCD, the top four most frequently occurring male RDD were orchitis, phimosis, paraphimosis and brucellosis, while the four RDD that had the lowest frequency of occurrence were

transmissible venereal tumour, testicular tumours, scrotal laceration and balanoposthitis, and there was no significant ( $p > 0.05$ ) difference in the seasonal occurrence of RDD in the males (Table 7).

Species distribution of occurrence of RDD showed that at SASVHM, RDD were most frequently encountered in caprine species followed by ovine, then bovine and equine (Figure 1), and at SVCD, the frequency nearly followed the same pattern with caprine species being the highest in frequency, followed by ovine, then bovine, canine, equine and feline species (Figure 2).

**Table 6.** Distribution of specific cases of reproductive disorders and diseases (RDD) in female animals presented for veterinary care at the State Veterinary Clinic, Damaturu (SVCD), Yobe State, Nigeria, 2010 – 2022.

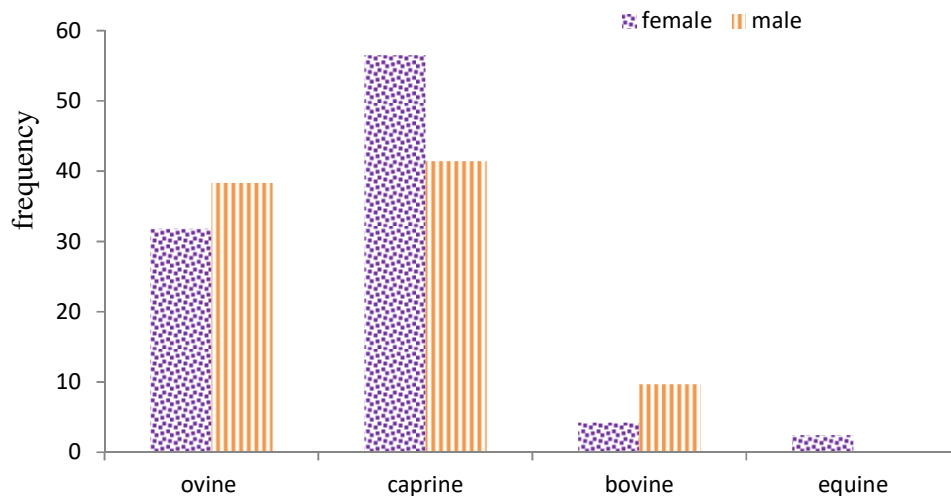
RDD in Females	Frequency during the seasons, with percentage in brackets		Total
	Rainy season	Dry season	
Dystocia	117 (15.3%)	215 (20.6%)	332 (18.3%)
Mastitis	121 (15.8%)	157 (15.0%)	278 (15.3%)
Retained placenta	111 (14.5%)	150 (14.4%)	261 (14.4%)
Metritis	94 (12.3%)	119 (11.4%)	213 (11.7%)
Pregnancy toxemia	76 (9.9%)	111 (10.6%)	187 (10.3%)
Vagina prolapse	46 (6.0%)	58 (5.6%)	104 (5.7%)
Uterine prolapse	33 (4.3%)	42 (4.0%)	75 (4.1%)
Abortion	30 (3.9%)	44 (4.2%)	74 (4.1%)
Post parturient paresis	28 (3.7%)	32 (3.1%)	60 (3.3%)
Post parturient paresis	28 (3.7%)	32 (3.1%)	60 (3.3%)
Agalactia	17 (2.2%)	20 (1.9%)	37 (2.0%)
Still birth	13 (1.7%)	16 (1.5%)	29 (1.6%)
Udder laceration	9 (2.5%)	11 (1.1%)	20 (1.1%)
Pyometra	8 (1.0%)	12 (1.2%)	20 (1.1%)
Brucellosis	11 (1.4%)	9 (0.9%)	20 (1.1%)
Teat infection	7 (0.9%)	10 (1.0%)	17 (0.9%)
Post parturient haemorrhage	7 (0.9%)	10 (1.0%)	17 (0.9%)
Vulvitis	7(0.9%)	10 (1.0%)	17 (0.9%)
Vaginitis	7 (0.9%)	9 (0.9%)	16 (0.9%)
Vaginal laceration	8 (1.0%)	6 (0.6%)	14 (0.8%)
Foetal maceration	7 (0.9%)	7 (0.7%)	14 (0.8%)
Foetal monster	7 (0.9%)	6 (0.6%)	13 (0.7%)
<b>Total</b>	<b>764 (42%)<sup>a</sup></b>	<b>1045 (58%)<sup>b</sup></b>	<b>1818</b>

<sup>a, b</sup>, Different superscript on the last (Total) row indicates significant ( $p < 0.05$ ) difference between the occurrence in rainy and dry seasons.

**Table 7.** Distribution of specific cases of reproductive disorders and diseases (RDD) in male animals presented for veterinary care at the State Veterinary Clinic, Damaturu (SVCD), Yobe State, Nigeria, 2010 – 2022.

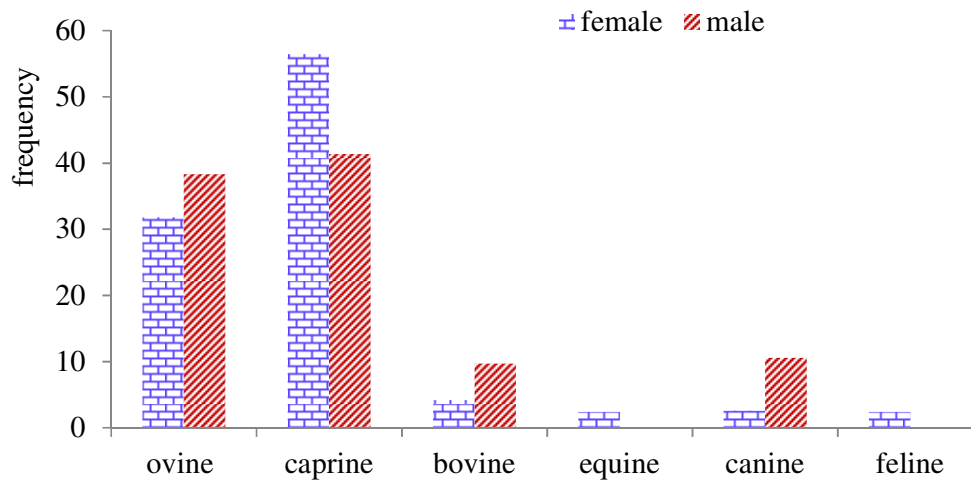
RDD in Males	Frequency during the seasons, with percentage in brackets		Total
	Rainy season	Dry season	
Orchitis	30 (29.4%)	36 (31.9%)	66 (30.7%)
Phimosis	15 (14.7%)	15 (13.3%)	30 (13.9%)
Paraphimosis	11 (10.8%)	16 (14.2%)	27 (12.6%)
Brucellosis	11 (10.8%)	15 (13.3%)	26 (12.0%)
Postithis	8 (7.8%)	6 (5.3%)	14 (6.5%)
Balanitis	6 (5.9%)	6 (5.3%)	12 (5.6%)
Balanopostithis	6 (5.9%)	4 (3.5%)	10 (4.7%)
Scrotal laceration	5 (4.9%)	6 (5.3%)	11 (5.1%)
Testicular tumors	5 (4.9%)	4 (3.5%)	9 (4.2%)
Transmissible venereal tumor	5 (4.9%)	5 (4.4%)	10 (4.7%)
<b>Total</b>	<b>102 (47.4%)<sup>a</sup></b>	<b>113 (52.6%)<sup>a</sup></b>	<b>215</b>

No significant difference ( $p > 0.05$ ) between the occurrence in rainy and dry seasons.



**Figure 1:** Patterns of distribution of reproductive disorders and diseases (RDD) among various animal species presented for veterinary care at the Senator Ali Sheriff Hospital Maiduguri (SASVHM), Borno State, Nigeria, between the years 2010 and 2022.





**Figure 2:** Patterns of distribution of reproductive disorders and diseases (RDD) among various animal species presented for veterinary care at the State Veterinary Clinic, Damaturu (SVCD), Yobe State Nigeria, between the years 2010 and 2022.

### Discussion and Conclusion

The 8.9% and 10.4% occurrence of RDD in animals presented for veterinary care at SASVHM and SVCD, respectively in this present study is relatively higher than the 4.07% occurrence reported by Waziri *et al.* (2006) for RDD survey at the State Veterinary Clinic Maiduguri 1993 – 2005, but it was lower than the 14.5% reported by Peter *et al.* (2014) in a 2004 – 2013 RDD survey at the Borno State Veterinary Clinic, Maiduguri. The differences in the time periods of the surveys may account for the differences in the RDD occurrence recorded or reported, and suggests that the trend of occurrence of RDD may be changing with time.

In the present study, a significant difference was observed between the frequencies of occurrence of RDD at the two locations studied (SASVHM and SVCD). This suggests that there may be factors associated with the location of the facility that influence the type of cases presented. Further investigation might be needed to determine the specific

factors that contribute to this difference. However, this finding may imply a disparity in access to reproductive healthcare services between the two populations served by these two hospitals/clinics.

A comparative analysis of the seasonal distribution of most frequently presented male and female reproductive cases in SAVHM and SVCD within the years 2010 – 2022 in the present study showed no significant difference between the distribution of diseases in both study locations as well as within the seasons of occurrences of these diseases. This could be attributed the fact that both study locations have lots of similarities such as similar average temperature, average rainfall, population and even similar geographical location in that Damaturu was a former part of Borno State, Nigeria.

The higher occurrence of RDD in females than in males in both study locations (SASVHM and SVCD) might be related to differences in patient demographics; higher proportion of females are commonly reared in the region,

or the fact that females are reared for a longer periods than males (Umaru *et al.*, 2009). Also, it is thought that the fact that female reproductive anatomy and physiology is more complicated and complex than that of males may predispose more females to the development of RDD than males.

The results of the present study which showed that pregnancy toxemia was the most frequent case (32.1%) at SASVHM followed by dystocia (15.1%) and post parturient paresis (12.0%), does not concur with the reports of Peter *et al.* (2014) who reported dystocia as the most frequent RDD (21.8%), followed by pregnancy toxemia (19.7%) and mastitis (14.4%) in Maiduguri in their 2004 – 2013 survey. It was worthy of note that at the SVCD, pregnancy toxemia and post parturient paresis were handled less frequently than at SASVHM, while the occurrence of cases of dystocia was higher at SVCD (18.3%) than what was recorded at SASVHM (15.1%). It is thought that the higher occurrence of pregnancy toxemia and post parturient paresis in SASVHM might be due to the fact that most animals in this region are reared under semi-intensive to extensive management systems. Other possible factors that might likely influence these variations of most prevalent female RDD presented at the two study locations are differences in animal breeds or genetics, nutrition, health, age and size among other factors.

Sheep and goats amongst other livestock that are presented in these clinics are mostly kept/reared by peasant farmers, and the fact that pregnancy toxemia is one of the most common reproductive cases encountered may possibly be attributed to feed shortage especially in the dry seasons or poor intensive management practice resulting in poor nutrition especially during the later stage of pregnancy. The high occurrence of dystocia cases in this present study have also been reported by previous researchers (William *et al.*, 2000; Waziri *et al.*, 2007; Peter *et al.*,

2014) and the present results were in agreement with these earlier reports. It is thought that the higher occurrence of dystocia is possibly attributable to poor management practice and lack of assisted intervention during parturition. The finding in this present study of higher occurrence of female RDD during dry seasons in both study areas (SASVHM and SVCD) than in rainy season agrees with earlier reports by Waziri *et al.* (2007) and Audu *et al.* (2016).

For the males in the present study, the relatively higher occurrence of orchitis, paraphimosis, phimosis and brucellosis concurs with the higher occurrence of such disorders as reported by Waziri *et al.* (2006). The reasons for the higher occurrence of male RDD in rainy season at SASVHM and a contrasting higher occurrence of male RDD in dry season at SVCD is not clear.

In the present study, caprine species had the highest recorded cases of RDD followed by ovine species in both male and female animals, while equine, canine and feline cases were of lower frequency relative to the ruminants; this is believed to probably be as a result of the fact that pet owners provide relatively higher level of better management for their pets than what is obtainable for ruminant species (which are production animals) in both study areas.

Based on the results of the study, it was concluded that reproduction disorders and diseases accounted for 8.9% of the total number of cases presented for veterinary care at the SASVHM and 10.4% of all cases presented at SVCD between the years 2010 to 2022, and that the most frequently recorded RDD in both hospitals/clinics were pregnancy toxemia and dystocia in females, and orchitis and brucellosis in males. Reproduction disorders and diseases were more frequent in females than in males, and female RDD occurred more frequently in rainy season than

in dry season. Pregnancy toxemia dystocia and mastitis were the most frequently reported female RDD, while orchitis, phimosis and paraphimosis were the most frequently reported male RDD in both hospitals/clinics. A decentralization of veterinary service delivery is recommended for easy accessibility of veterinary service to people in need and recording of more details of cases (such as remarks on survival of treated patient) is advocated. The present study suffered limitations of inaccuracy of information in some case files, some cases of missing hospital record books, and the fact that the diagnosis of most reproductive disorders and diseases were mostly based clinical observation, history, clinical signs and physical evaluations only.

#### **Acknowledgement**

We wish to appreciate the management of Senator Ali Sheriff Veterinary Hospital, Maiduguri and State Veterinary Clinic, Damaturu for their support during the study.

#### **Conflict of Interest**

The authors declare no conflict of interest

#### **References**

- Abiola OJ, Olaogun SC, Emedoh OM and Jeremiah OT (2016). A retrospective study of ruminant cases presented between 1996 and 2005 at the Veterinary Teaching Hospital, University Of Ibadan, Ibadan, Nigeria. *International Journal of Livestock Research*, 6(7): 16 – 23.
- Alam M, Islam KMF, Hoque MR, Uddin N, Quader M, Hossain MI, Nine HSMZ (2016). Clinical investigation of reproductive cases in cows and buffaloes at teaching veterinary hospitals in India. *Journal of Dairy, Veterinary and Animal Research*, 4(1): 227 – 231.
- Audu Y, Dauda J, Lekko YM, Haruna AA, Bamanga MU (2016). A retrospective study of cases of disease condition of large and small ruminants handled at state veterinary hospital Maiduguri, Borno state, Nigeria. *Greener Journal of Epidemiology and Public Health*, 4(3): 55 – 60.
- Babagana M, Madaki MJ, Adamu A and Gujba AA (2019). Impacts of Fulani herdsman-farmers' conflicts on food production in Gujba and Tarmuwa Local Government areas of Yobe state, Nigeria. *International Journal of Contemporary Research and Review*, 10(2): 20316 – 20331.
- MacRae J, O'Reilly L and Morgan P (2005). Desirable characteristics of animal products from a human health perspective. *Livestock Production Science*, 94(1-2): 95 – 103.
- Mayom I and Mohammed IA (2014). A decade of assessment of Maiduguri urban expansion (2002-2012): Geospatial approach. *Global Journal of Human Science*, 14(2): 1 – 10.
- Muhammed I, Ibrahim JM and Ahmed AJ (2014). Analysis of future urban growth scenario of Damaturu town in Yobe State, Nigeria. *Global Journal of Research and Review*, 1(3): 117 – 124.
- Peter ID, Michelia GD, Bukar MM, Maina VA and Biu AA (2014). Retrospective studies of reproductive disorders of small ruminant in Maiduguri, Nigeria. *Journal of Agriculture and Veterinary Sciences*, 6(2): 51 – 58.
- Sarker YA, Miah AH, Sharif HN, Himel MH, Islam S, Ray RC, Paul TK, Islam MT and Sikder MH (2015). A retrospective study of common diseases at Veterinary

- Teaching Hospital, Bangladesh Agricultural University Mymensingh. *Bangladesh Journal of Veterinary Medicine*, 13(2): 55 – 61.
- Singh B and Prasad S (2008). Modelling of economic losses due to some important diseases in goats in India. *Agricultural Economics Research Review*, 21(2): 297 – 302.
- Umaru MA, Adeyeye AA, Abubakar A and Garba HS (2009). Retrospective analysis of disease condition among reproductive domestic ruminants in Sokoto, Nigeria. *Animal Research International Journal*, 6(1): 946 – 948.
- Wahab YA, Akinlabi EY and Raheem KA (2019). A five-year retrospective study of small ruminant cases presented to the State Veterinary Hospital, Ibadan, Nigeria. *International Journal of Environment, Agriculture and Biotechnology*, 4(5): 1382 – 1388.
- Waziri MA, Adamu A and Bukar MM (2006). Analysis of reproductive cases handled at the state veterinary clinic Maiduguri, Nigeria (1993-2005). *Nigeria Veterinary Journal*, 27(2): 54 – 59.
- William A, Bzugu PM and Atsanda NN (2000). A retrospective study of diseases of ruminants in Maiduguri, Nigeria. *Tropical Veterinary Journal*, 18: 228 – 231.