

Retrospective evaluation of theriogenology cases handled at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, between 2013 and 2024

Moyinoluwa J. Onoja *, Ifeoluwakishii S. Ajiyo and Matthew O. Oyeyemi

Department of Theriogenology, Faculty of Veterinary Medicine, University of Ibadan, Ibadan, Nigeria.

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Abstract

This study evaluated 1,327 theriogenology cases presented at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, over a 12 year period (2013 – 2024). Data on case type (elective/diagnostic service versus reproductive disorder), species, sex and period of presentation were summarized using frequencies and percentages, with associations tested using Chi-square analysis. Canine cases dominated the presentations (93.7%), followed by caprine (2.7%), bovine (1.7%), and ovine (1.2%) cases. The top reasons for presentation were reproductive management services - optimal breeding time determination (41.3%) and pregnancy diagnosis (17.1%), together comprising over half of all cases. Other frequent presentations included dystocia (6.4%), transmissible venereal tumour (TVT) (4.5%), pregnancy complications (4.1%) and semen evaluation (2.7%). Elective/diagnostic services accounted for 65.8% of cases, while reproductive disorders made up 34.2%. Non-canine species were significantly more likely to present for disorders than elective services, when compared to canines. Among canines, males were significantly presented more often for disorders than females. Breeds such as Boerboel, German Shepherd and Rottweiler were presented more often with TVT, vaginal/uterine prolapse and mastitis, while small breeds like Lhasa Apso were presented more often with dystocia. In non-canines, dystocia predominated in ovine and caprine cases, whereas request for pregnancy diagnosis was highest in bovines. Disorder-related presentations rose significantly in the second half (2019–2024) versus the first half (2013–2018) of the study period. The caseload was predominantly companion-animal focused, especially canine reproductive management cases, contrasting with disorder- and livestock-dominated reports from northern Nigeria veterinary establishments, indicating a need for expanded outreach to non-canine owners in Ibadan, Nigeria.

Keywords: Retrospective study; Theriogenology cases; Animals; Reproductive disorders; Elective/diagnostic services; Veterinary Teaching Hospital, Ibadan, Nigeria.

* **Correspondence:** Moyinoluwa J. Onoja; Email: olusojimoyinoluwa@gmail.com; Phone: +2347062488513

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Introduction

Therigenology, the branch of veterinary medicine concerned with reproductive physiology and pathology (reproductive health and disease), is indispensable to both pet practice and livestock farming (Peter *et al.*, 2014, Tibary, 2017). Reproductive success is critical to both livestock profitability and the welfare of pets. Therefore, reproductive failures (whether infertility, dystocia, pregnancy loss or genital disease) have significant clinical and financial impacts (Ibe *et al.*, 2025). In Nigeria, as in much of sub-Saharan Africa, the burden and pattern of reproductive diseases across species remain incompletely documented, and most of what is known derives from retrospective reviews of case records held at university veterinary teaching hospitals (VTHs) and government veterinary clinics (Ali *et al.*, 2023; Raji *et al.*, 2024).

Retrospective case-record reviews remain one of the most practical tools for characterising disease patterns in resource-limited veterinary settings, since they draw on data that are already routinely collected and require no additional investment in surveillance infrastructure (Waziri *et al.*, 2006; Umaru *et al.*, 2009). Within Nigeria, such reviews have described markedly different caseload patterns depending on the type of establishment and its catchment area. Studies conducted at government veterinary clinics serving predominantly livestock-owning communities in the north-east, such as the Senator Ali Sheriff Veterinary Hospital and State Veterinary Clinic Damaturu, have reported reproductive diseases and disorders in a large, ruminant-inclusive caseload, with female animals bearing the overwhelming majority of the burden (Ali *et al.*, 2023; Peter *et al.*, 2014). In contrast, studies conducted at university veterinary teaching hospitals located in major urban centres, which tend to serve a more companion-animal-oriented clientele, have reported canine-dominated

caseloads, as seen at the University of Ilorin (Raji *et al.*, 2024) and the University of Nigeria, Nsukka (Ibe *et al.*, 2025). In other parts of the world, similar canine-focused patterns have been described at referral and university small-animal hospitals, where dystocia and pyometra dominate the spectrum of reproductive emergencies (Darvelid and Linde-Forsberg, 1994; Martins-Bessa *et al.*, 2018).

However, there are no published reports on therigenology cases handled at the Veterinary Teaching Hospital (VTH), University of Ibadan, Nigeria. This study therefore evaluated the therigenology cases presented at the VTH, University of Ibadan for a twelve-year period, from 2013 to 2024, with the aim of describing the species, sex, temporal and diagnostic pattern of presentation, and comparing these findings with those reported at other veterinary establishments.

Materials and Methods

Study Area: The study location, Ibadan, lies between latitude 7° 02' 49" and 7° 43' 21" N and longitude 3° 31' 58" and 4° 08' 20" E. Ibadan is the capital of Oyo state, Nigeria. This retrospective study was conducted at the Veterinary Teaching Hospital (VTH), University of Ibadan, Ibadan, Oyo State, Nigeria. The VTH is a referral hospital that serves the city of Ibadan and its environs, and receives both companion-animal and livestock cases referred by private practitioners or presented directly by owners.

Data source and extraction: This retrospective study utilized data from cases presented to the Veterinary Teaching Hospital (VTH) between January 2013 and December 2024. Only VTH case files with recorded therigenology diagnostic tests of interest or a definitive clinical diagnosis were included in this retrospective study. Clinical data were manually extracted from the paper-based VTH files.

For each case entry, the date of presentation, species, breed, age, sex and clinical diagnosis (or reason for presentation) were extracted into a spreadsheet. A total of 1,327 case entries were retrieved for analysis. Where an entry recorded more than one reason for presentation, each reason was extracted and recorded, so that the sum of individual presenting-complaint frequencies (1,412) exceeded the number of case entries (1,327). For several presenting complaints, the case records additionally specified the diagnostic or therapeutic method used (for example, the specific tool used to determine optimum breeding time, the modality used for pregnancy diagnosis, or the method by which dystocia was resolved); these details were extracted separately and summarised for the three leading presenting complaints.

Individual presenting complaints were grouped, based on their clinical nature, into two broad categories namely: reproductive management/diagnostic service or reproductive disorder. The former comprised determination of optimum breeding time, pregnancy diagnosis, semen evaluation, breeding soundness examination, artificial insemination, antenatal or postnatal examination and routine reproductive check-ups; while the latter (reproductive disorders) comprised female reproductive disorders - dystocia, pyometra, vaginal/uterine prolapse, abortion, neonatal mortality/stillbirth, pseudopregnancy, retained foetal membranes, agalactia, metritis and related conditions; reproductive tract neoplasia – principally transmissible venereal tumour (TVT); infertility; pregnancy complications; male reproductive disorders - cryptorchidism, paraphimosis/penile prolapse and preputial/penile abnormalities; and other miscellaneous presentations. For the purpose of statistical comparison, the categories were further collapsed into 'reproductive disorder' versus 'reproductive management/diagnostic

service', to test associations with species, sex and presentation period.

Statistical analysis: Data were summarised as frequencies and percentages using Microsoft Excel. The Chi-square (χ^2) test of independence was used to test associations between case type (reproductive management/diagnostic service versus reproductive disorder) and species group (canine versus non-canine), sex (within the canine subset), and presentation period (2013-2018 versus 2019-2024). Statistical significance was set at $p < 0.05$. For seasonal comparison, cases were classified as presenting in the rainy season (March-October, 8 months) or the dry season (November-February, 4 months), consistent with the regional climate of Ibadan, south-western Nigeria.

Results

Total and annual caseload: A total of 1,327 theriogenology cases were retrieved from the case files for the period between January 2013 and December 2024. The annual number of cases fluctuated over the review period, and ranged from the lowest (77 cases) recorded in 2019 to the highest (170) recorded in 2021 (Figure 1).

Species distribution: Cases involving canine species accounted for the large majority (93.7%), followed by the caprine (2.7%), bovine (1.7%) and ovine (1.2%), with 0.2% each for swine, equine and feline species (Table 1).

Sex distribution: Apart from the one case of hermaphrodite reported, out of the 1,326 cases with a recorded sex, 1,238 (93.4%) were females and 88 (6.6%) were males, reflecting the predominance of female-oriented reproductive management services (pregnancy diagnosis and determination of optimum breeding time) in the caseload.

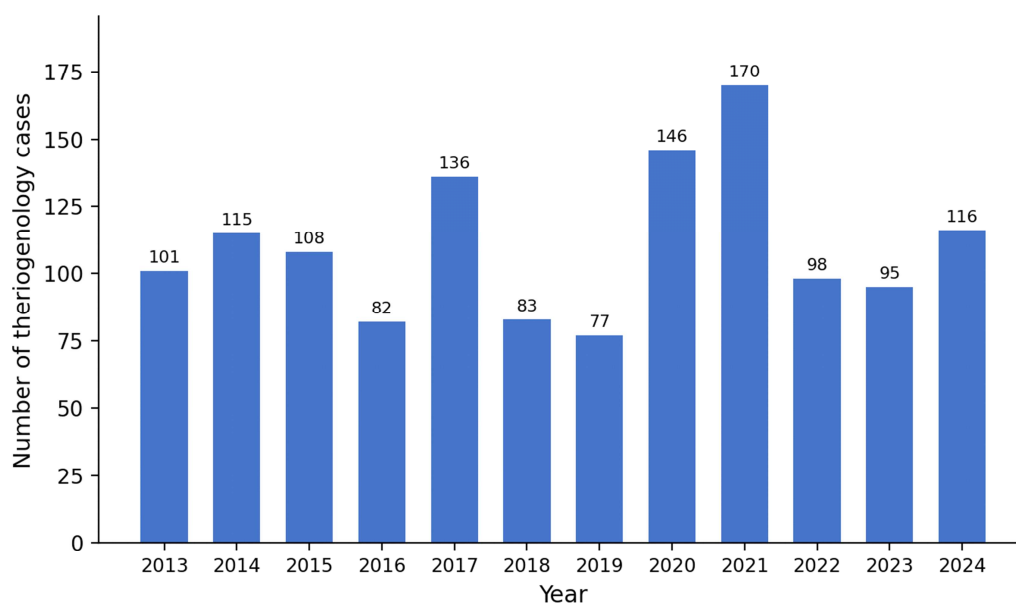


Figure 1. Number of theriogenology cases presented annually at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, 2013 – 2024.

Table 1. Species distribution of animals presented for theriogenology consultation at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, 2013– 2024.

Species	Number of cases	Percentage
Canine	1,244	93.7%
Caprine	36	2.7%
Bovine	23	1.7%
Ovine	16	1.2%
Swine	3	0.2%
Equine	3	0.2%
Feline	2	0.2%
Total	1,327	100%

Pattern of case presentations: The pattern of case presentations is shown in Table 2. Determination of optimum breeding time and pregnancy diagnosis were, together, the two leading reasons for presentation, jointly accounting for 58.4% of all recorded complaints, followed by dystocia, transmissible venereal tumour, pregnancy complications (a broad category comprising conditions affecting an established pregnancy or the immediate postpartum period), semen

evaluation, infertility, pyometra, abortion/miscarriage, breeding soundness examination, mastitis and other conditions such as recurrent conception failure, vaginal microbial culture, paraphimosis, artificial insemination, agalactia, anoestrus, threatened abortion, vaginal hyperplasia/growth, brucellosis screening, vulvitis, vaginitis, vulvovaginitis, orchitis, posthitis, balanoposthitis, preputial abnormality, post-partum examination, silent oestrus,

cryptorchidism, uterine prolapse, cervico-vaginal prolapse, penile prolapse, prolapse of urethral mucosa, preputial and penile abnormalities, scrotal and preputial skin lesions, umbilical/neonatal abscessation, pregnancy termination, mammary neoplasia, routine reproductive check-up, antenatal examination, scrotal oedema, hermaphroditism/intersex, abdominal hernia with uterine evisceration, impotentia coeundi and other mating irregularities (Table 2).

Diagnostic category: When grouped into the two broad diagnostic categories, reproductive management/diagnostic services accounted for majority of the case presentations recorded, while reproductive disorders accounted for the remaining, comprising

female reproductive disorders, reproductive tract neoplasia, infertility, pregnancy complications, male reproductive disorders and other miscellaneous presentations (Table 3). At the level of individual case entries (rather than individual complaints), overall, 873 (65.8%) of the 1,327 cases were classified as elective/diagnostic service cases, and 454 (34.2%) as reproductive disorder cases (Table 3).

Breed distribution: The Boerboel, German Shepherd and Rottweiler were the dog breeds that were most frequently presented with theriogenology cases, together accounting for 66.3% of all canine cases, followed by others (Table 4).

Table 2. The major reproductive case presentations recorded at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, 2013– 2024.

Presenting complaint	Number of cases	Percentage of total
Determination of optimum breeding time	583	41.3%
Pregnancy diagnosis	242	17.1%
Dystocia	90	6.4%
Transmissible venereal tumour (TVT)	63	4.5%
Pregnancy complications	58	4.1%
Semen evaluation	38	2.7%
Infertility	34	2.4%
Abortion/miscarriage	30	2.2%
Pyometra	25	1.8%
Breeding soundness examination	24	1.7%
Mastitis	22	1.6%
Neonatal mortality/stillbirth	21	1.5%
Vaginal prolapsed	19	1.3%
Pseudopregnancy	14	1.0%
Others	154	10.8%

Table 3. Frequency of theriogenology case presentations at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, 2013-2024, based on broad diagnostic category.

Diagnostic category		Number of presentations	Percentage
Reproductive management/diagnostic services		930	65.8%
Reproductive disorders	Female reproductive disorders	258	18.3%
	Reproductive tract Neoplasia	74	5.3%
	Infertility	60	4.2%
	Pregnancy complications	58	4.1%
	Male reproductive disorders	29	2.1%
	Others	3	0.2%
Total		1,412	100%

Associations between case type and species, sex and period: Non-canine species were significantly presented more often for reproductive disorders than for elective/diagnostic services, when compared with the canines: 64 of 83 (77.1%) non-canine cases were disorder-related, compared with 390 of 1,244 (31.4%) canine cases. Among canine cases, male dogs were significantly presented more often for disorders than female dogs: 53 of 87 (60.9%) male canine cases were disorder-related, compared with 336 of 1,156 (29.1%) female canine cases. The proportion of disorder-related cases was also significantly higher in the second than in the first half of the study period: 196 of 625 (31.4%) cases were disorder-related in 2013 – 2018, compared with 258 of 702 (36.8%) in 2019 – 2024 (Table 5).

Diagnostic and therapeutic methods for the leading presentations: The diagnostic and therapeutic methods used for determination of optimum breeding time, pregnancy diagnosis and handling of dystocia cases are presented in Table 6. Vaginal cytology technique was the major (85.9%) procedure used for optimum breeding time determination, while ultrasonography (86.8%) was majorly used for pregnancy diagnosis.

Caesarian section (46.7%) was the most frequently used method for handling dystocia cases, followed by manual traction (31.1%) and oxytocin/glucose/dextrose administration (22.2%) (Table 6).

Frequency of occurrence of reproductive disorders among dog breeds: The top leading, second leading and third leading dog breeds with regards to frequency of occurrence of reproductive disorders is presented in Table 7. The Boerboel was top leading in cases of TVT (61.9%), vaginal/uterine prolapse (52.6%) and mastitis (47.6%), while the German Shepherd was top among cases of pyometra (36.0%) and paraphimosis/preputial disorders (38.5%) (Table 7).

Conditions presented by bovine, ovine and caprine species: Among the 23 bovine cases, pregnancy diagnosis was the leading reason for presentation (7 cases; 30.4%), followed by breeding soundness examination, neonatal mortality/stillbirth and placental retention (3 cases each; 13.0%); mastitis and cervico-vaginal prolapse were each recorded in 2 cases while dystocia was recorded in 1 case.

For the 16 ovine cases, dystocia was overwhelmingly the leading presentation (14 cases; 87.5%), the remainder was uterine prolapse (2 cases; 12.5%).

Table 4. Breed distribution of canine theriogenology cases at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, 2013– 2024.

Dog breeds	Number of cases	Percentage of canine cases
Boerboel	388	31.2%
German Shepherd	223	17.9%
Rottweiler	214	17.2%
Caucasian	120	9.6%
Lhasa Apso	47	3.8%
Pitbull	35	2.8%
Local/Mongrel	21	1.7%
Crossbreed	20	1.6%
Bull Mastiff	16	1.3%
American Eskimo	15	1.2%
Siberian Husky	11	0.9%
Neapolitan Mastiff	9	0.7%
Samoyed	6	0.5%
Dobermann	5	0.4%
Great Dane	4	0.3%
Cane Corso	4	0.3%
Terrier	3	0.2%
French Bulldog	3	0.2%
American Bully	3	0.2%
Chow Chow	3	0.2%
Presacanario	2	0.2%
Pug	2	0.2%
Golden Retriever	1	0.1%
Ridgeback	1	0.1%
American Pocket Bully	1	0.1%
Bully	1	0.1%
Saint Bernard	1	0.1%
South African Mastiff	1	0.1%
Shih Tzu	1	0.1%
Belgian Malinois	1	0.1%
Deutsch	1	0.1%
Swiss Mountain	1	0.1%
Not recorded	80	6.4%
Total	1244	100%

Table 5. Chi-square tests of association between case types (elective/diagnostic service vs. reproductive disorder) and species group, sex and presentation period of theriogenology cases at the Veterinary Teaching Hospital Ibadan, Nigeria, 2013 – 2024.

Comparison	Test statistic (χ^2)	Df	P-value	Interpretation
Species group (canine vs. non-canine) × case type	72.38	1	< 0.001	Significant
Sex (male vs. female, canines only) × case type	38.18	1	< 0.001	Significant
Presentation period (2013 – 2018 vs. 2019 – 2024) × case type	4.27	1	0.039	Significant

Table 6. Diagnostic and therapeutic handling methods recorded for the three leading presenting complaints at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, 2013– 2024.

Presenting complaint	Method	Number of cases	Percentage
Determination of optimum breeding time (n = 583)	Vaginal cytology only	501	85.9%
	Vaginal cytology + Draminski ovulation detector	68	11.7%
	Vaginal cytology + progesterone assay	10	1.7%
	Progesterone assay only	4	0.7%
Pregnancy diagnosis (n = 242)	Ultrasonography	210	86.8%
	Abdominal palpation	37	15.3%
	Draminski pregnancy detector	7	2.9%
	Rectal palpation	5	2.1%
	Relaxin assay	2	0.8%
	Method not specified	11	4.5%
Dystocia (n = 90)	Caesarean section	42	46.7%
	Trial (manual) traction	28	31.1%
	Management with oxytocin and/or glucose/dextrose.	20	22.2%
	Foetotomy	2	2.2%
	Intervention not specified	8	8.9%

Note: Breeding-time-determination categories are mutually exclusive and sum to 583 (100%). Pregnancy diagnosis and dystocia percentages may each sum to more than 100% because some cases had more than one method or intervention recorded; for dystocia specifically, 5 of the 20 cases managed with oxytocin and/or glucose/dextrose also required trial traction, and 8 cases had oxytocin/glucose given after an unsuccessful initial attempt at another method, so the categories are not mutually exclusive.

Table 7. Leading canine breeds presented with theriogenology complaints at the Veterinary Teaching Hospital, University of Ibadan Nigeria, 2013– 2024, showing each breed's percentage share of disorder cases.

Disorders	N	Top Leading breed (%)	Second leading breed (%)	Third leading breed (%)
Transmissible venereal tumour (TVT)	63	Boerboel (61.9%)	German Shepherd (11.1%)	Local/Mongrel (6.3%)
Dystocia	54	Boerboel (27.8%)	German Shepherd (20.4%)	Lhasa Apso (16.7%)
Infertility	49	Boerboel (22.4%)	Rottweiler (22.4%)	German Shepherd (18.4%)
Pregnancy complications	46	Boerboel (37.0%)	Rottweiler (23.9%)	German Shepherd (21.7%)
Abortion/miscarriage	35	Boerboel (42.9%)	Rottweiler (17.1%)	German Shepherd (14.3%)
Pyometra	25	German Shepherd (36.0%)	Boerboel (24.0%)	Pitbull (12.0%)
Vaginal/uterine prolapse	19	Boerboel (52.6%)	Caucasian (15.8%)	Rottweiler (15.8%)
Mastitis	21	Boerboel (47.6%)	German Shepherd (19.0%)	Rottweiler (14.3%)
Pseudopregnancy	14	Boerboel (35.7%)	Rottweiler (35.7%)	Pitbull (14.3%)
Paraphimosis/preputial disorders	13	German Shepherd (38.5%)	Boerboel (30.8%)	Crossbreed (15.4%)
Neonatal mortality/stillbirth	18	Boerboel (38.9%)	German Shepherd (11.1%)	Rottweiler (11.1%)
Anaestrus/silent oestrus	11	German Shepherd (36.4%)	Boerboel (27.3%)	Rottweiler (18.2%)

Among the 36 caprine cases, dystocia was again the leading presentation (20 cases; 55.6%), with the remaining cases distributed across a long tail of largely single-case presentations, including placental retention, agalactia, vaginal prolapse, paraphimosis, threatened abortion and peste des petits ruminants-associated abortion, pregnancy toxemia, vulvo-vaginitis, and acaricide poisoning in pregnancy.

Seasonal distribution: Using the regional definition of the rainy season (March–October, 8 months) and dry season (November–February, 4 months) for Ibadan Nigeria, according to Egbinola and Amobichukwu (2013), cases presented in the rainy and dry

seasons are shown in Table 8. The observed distribution across the two seasons was not significantly different ($p > 0.05$). The expected case distribution under a null hypothesis of no seasonal effect is 2:1 (rainy:dry) rather than 1:1, because the rainy season (8 months) is twice as long as the dry season (4 months). A chi-square goodness-of-fit test comparing observed counts (890 rainy, 437 dry) against this expected 2:1 split (884.7:442.3) was not significant ($p > 0.05$), indicating no evidence of true seasonal variation in caseload once differences in season length are accounted for. This finding was corroborated by a repeated-measures analysis treating each of the 12 study years as a matched pair:

converting rainy- and dry-season caseloads to a monthly rate to account for the unequal season lengths, the mean within-year difference (rainy – dry months) confirmed no consistent seasonal pattern across the study period.

Discussion

The theriogenology caseload at the Veterinary Teaching Hospital (VTH), University of Ibadan Nigeria over the 2013– 2024 study period was overwhelmingly dominated by the canine species (93.7%) followed by caprine (2.7%), similar to what was observed at VTH, University of Ilorin by Raji *et al.* (2024) who reported that dogs made up 75% of theriogenology cases followed by caprine (13%) and ovine (6%), with other species contributing the remainder. Njoga *et al.* (2024) and Ibe *et al.* (2025) reviewed reproductive disorders at the VTH, University of Nigeria, Nsukka, and likewise found the highest

prevalence of reproductive disease in the canine species (44.6% and 51.0%), ahead of caprine (41.6% and 33.3%), ovine (8.5% and 13.5%) and porcine (3.3% and 2.1%) species respectively. The companion-animal-dominated pattern found in this study is in contrast to the caseloads reported by Ali *et al.* (2023) and Peter *et al.* (2014) at veterinary establishments in Borno and Yobe states serving more livestock-oriented catchment areas in northern Nigeria. Both studies described caseloads with a substantially larger livestock and small-ruminant component. These contrasting patterns most likely reflect differences in the surrounding human population's animal-ownership culture and economic activity. University of Ibadan and Ilorin VTHs serve a predominantly urban, pet-owning clientele, whereas government clinics in north-east Nigeria serve communities in which livestock and small-ruminant husbandry are more central to the local economy.

Table 8. Seasonal distribution of theriogenology cases presented at the Veterinary Teaching Hospital, University of Ibadan, Nigeria, between 2013 and 2024.

Years	Number, with percentage in brackets		Total
	Rainy season (March – October)	Dry season (November – February)	
2013	63 (62.4%)	38 (37.6%)	101
2014	69 (60.0%)	46 (40.0%)	115
2015	72 (66.7%)	36 (33.3%)	108
2016	57 (69.5%)	25 (30.5%)	82
2017	109 (80.1%)	27 (19.9%)	136
2018	75 (90.4%)	8 (9.6%)	83
2019	47 (61.0%)	30 (39.0%)	77
2020	95 (65.1%)	51 (34.9%)	146
2021	114 (67.1%)	56 (32.9%)	170
2022	39 (39.8%)	59 (60.2%)	98
2023	80 (84.2%)	15 (15.8%)	95
2024	70 (60.3%)	46 (39.7%)	116
Total	890	437	1,327

Another notable feature of the present caseload was the dominance of elective and diagnostic reproductive services such as determination of optimum breeding time and pregnancy diagnosis which together accounted for 58.4% of all presenting complaints over reproductive disorders, which made up only about a third of cases. This pattern again showed some similarity with the report of Raji *et al.* (2024) at VTH University of Ilorin, where vaginal cytology for breeding-time determination had the highest presentation (48.8%) compared to this current study with 41.3% of cases presented for determination of optimum breeding time, but while the second highest case presentation in this current study was pregnancy diagnosis (17.1%), Raji *et al.* (2024) reported semen evaluation (21.4%) which in this study represented only 2.7% of cases.

The high proportion of elective service visits in the present dataset is consistent with a caseload increasingly shaped by planned breeding management in valuable guard- and companion-dog breeds as well as in bovines. Boerboel, German Shepherd and Rottweiler together accounted for 66.3% of all canine cases, for which owners are more likely to seek proactive veterinary input on breeding time and pregnancy status than for less economically valuable dog breeds.

The majority of breeding-time-determination cases relied on vaginal cytology, either alone (85.9%) or combined with an ovulation detector or progesterone assay (13.4% combined), mirroring the emphasis on vaginal cytology-based breeding management, as described by Raji *et al.* (2024) and reflecting its established status as the mainstay, low-cost method of timing canine matings in Nigerian veterinary practice (Raheem *et al.*, 2010). A small proportion of cases (0.7%) instead relied solely on progesterone assay without cytological support, suggesting that hormonal assay is available at this hospital as an alternative rather than purely adjunct tool

where cytological facilities or expertise are constrained.

Pregnancy diagnosis, similarly, was overwhelmingly ultrasonography-based (86.8% of cases), reflecting the increasing accessibility of diagnostic ultrasonography. Pregnancy diagnosis was the leading reason for bovine presentations (30.4% of bovine cases), using both ultrasonography and rectal palpation; this is similar to the findings of Hussein *et al.* (2025) at the Veterinary Teaching Hospital, University of Mosul in Iraq where cows were mostly presented for pregnancy diagnosis using ultrasonography.

Among the reproductive disorders recorded, dystocia was the overall most frequent complaint, the single most frequent complaint in both ovine (87.5%) and caprine (55.6%) caseloads, and the second most frequent complaint in canines. Njoga *et al.* (2024) and Ibe *et al.* (2025) similarly found dystocia to be the leading reproductive disorder at the VTH University of Nigeria, Nsukka, same as Ali *et al.* (2023) at State Veterinary Clinic Damaturu, and Raji *et al.* (2024) at VTH University of Ilorin. Beyond Nigeria, Hussein *et al.* (2025) found dystocia to be the leading obstetrical case in ewes at the VTH Mosul Iraq, while Martins-Bessa *et al.* (2018) also reported that dystocia accounted for a large percentage of reproductive emergencies in bitches presented to a Portuguese general veterinary hospital, second only to pyometra. Darvelid and Linde-Forsberg (1994) similarly established dystocia as a common and clinically significant reproductive emergency in the female dogs in Sweden.

The finding in the present study that in handling dystocia Caesarean section was more frequently used than trial (manual) traction, is in keeping with the pattern reported globally, where surgical intervention was reportedly used in a substantial proportion of canine dystocia presentations (Darvelid and Linde-Forsberg, 1994). Some of the dystocia cases

were also managed medically using oxytocin and/or glucose/dextrose administration, either as the sole successful intervention, or as an adjunct preceding trial traction, indicating that a meaningful minority of dystocia cases were managed, at least initially, without recourse to surgery in order to avoid the cost and risk of Caesarean section.

Transmissible venereal tumour (TVT) was the second overall most frequent disorder (4.4% of all complaints) and the most frequent disorder in canine cases in the present study, a finding broadly consistent with the substantial TVT burden reported in Nigerian canine populations by Ibe *et al.* (2025), who found TVT disproportionately affecting Nigerian indigenous dog breeds; this reflects the continued circulation of this naturally transmissible tumour among free-roaming and semi-free-roaming dog populations.

The Boerboel, German Shepherd and Rottweiler dog breeds featured prominently among cases of almost every disorder probably because the three breeds together made up two-thirds of the canine caseload. The clearest and most biologically plausible breed association in the present dataset, however, involved the Lhasa Apso, a much smaller breed, comprising only 3.8% of the canine caseload overall, but it accounted for 16.7% of dystocia cases, an approximately four-fold over-representation. This pattern is consistent with the well-established association between small/toy breed status and dystocia risk in available literature, where a disproportionately narrow maternal pelvic canal relative to foetal head size is a recognised mechanism of obstructive dystocia in small-breed bitches (Darvelid and Linde-Forsberg, 1994; Martins-Bessa *et al.*, 2018). In contrast, the elevated Boerboel representation in TVT, prolapse and mastitis most likely reflects a combination of this breed's overall numerical dominance in the caseload.

Non-canine species were significantly more likely than canines to present specifically for a reproductive disorder rather than an elective service, suggesting that livestock and small-ruminant owners in this area seek reproductive expert intervention largely reactively, once a problem has already arisen, rather than proactively for breeding management - a pattern broadly consistent with the reports of Peter *et al.* (2014) and Ali *et al.* (2023).

Within the canine species, male dogs were also significantly more likely than females to present for a disorder rather than a service which is unsurprising, given that most elective services in this dataset (pregnancy diagnosis, breeding-time determination) are female-specific, while male dogs are typically presented only when a problem such as cryptorchidism, paraphimosis, orchitis or infertility were noticed.

The finding that the proportion of disorder-related presentations was significantly higher in the second half (2019-2024) of the study period than in the first half (2013-2018) may reflect a gradual shift in caseload composition – for example, an increase in referred, disorder-related cases to the hospital. The sharp decrease in annual caseload from its peak in 2021 (170 cases) to 98 and 95 cases respectively in 2022 and 2023 cannot be explained. The finding in the present study of no significant seasonal differences in occurrence of reproductive disorders contrasts with the reported significant dry-season predominance of reproductive disorders such as pregnancy toxemia reported by Ali *et al.* (2023) which peaks during the dry-season due to feed shortage.

In available literature, pyometra was reported as the most frequently reported reproductive emergency and an indication for emergency ovariohysterectomy, often accompanied by postoperative complications (Turkki *et al.*, 2023), but in the present study, pyometra

constituted just about 1.8% of all complaints, lower than values reported in dogs by Egenvall *et al.* (2001) in a Swedish study. This comparatively low pyometra frequency recorded at the VTH University of Ibadan may reflect genuine differences in breeding management, under-recognition of early or subclinical pyometra or a tendency for advanced cases to be managed by private practitioners.

The frequency of presentation of feline cases in the present study was very low, consistent with the generally low presentation of cats for theriogenology care in Nigeria as reported by Raji *et al.* (2024) at VTH Ilorin and Njoga *et al.* (2024) at VTH Nsukka. This finding is in contrast to the substantial feline dystocia caseload documented at University Animal Hospital in Uppsala, Sweden (Axnér *et al.*, 2025).

Some limitations of this study are hereby acknowledged: As a retrospective study of routinely collected clinic case files, the analysis was constrained by the level of detail recorded at the point of consultation as well as inability to access some case files which led to their exclusion from this study. Also, the marked paucity of cases from certain species groups (equine, porcine, feline) in this dataset may likely reflect the ambulatory management of some of these cases by private veterinary practitioners due to difficulty in carrying large-sized species of animals such as the equine and porcine to the clinic or a low demand for veterinary reproductive services in these species around Ibadan.

Conclusion: This twelve-year retrospective study showed that the theriogenology caseload of the VTH University of Ibadan Nigeria is dominated by the canine species and by elective reproductive management services, particularly determination of optimum breeding time and pregnancy diagnosis, in contrast to the more disorder- and livestock-dominated caseloads reported

at government veterinary establishments in northern Nigeria. These findings provide useful reference information for clinical training and resource planning at the VTH Ibadan. It also highlights the potential and need to broaden outreach services for livestock and small-ruminant farmers in Ibadan, who currently engage with the hospital mainly when reproductive problems arise.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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