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A Five-Year Retrospective Study of Small Ruminant Cases Presented to the State Veterinary Hospital, Ibadan Nigeria

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Abstract**—** *A five-year retrospective study was conducted using clinical case record of sheep and goat presented for treatment at State Veterinary Hospital, Ibadan, Nigeria between July 2013 and June 2018. A total of 520 small ruminants were presented within this period.Simple descriptive frequency statistic was employed to determine disease prevalence. Out of the 520 small ruminants presented, 360(69.2%) were sheep and 160(30.8%) were goat. The most frequently diagnosed diseases in these animals were endoparasitism (31.3%), viral infections (18.3%), bacterial infections (15.6%), reproductive conditions (8.3%) and musculoskeletal disorders (7.7%). Prevalence of diseases among small ruminants revealed that endoparasitism (22.5%), viral infections (12.3%), bacterial infections (10.2%),musculoskeletal disorders (6.3%) and reproductive conditions (5.2%) were the most prevalent in sheep while endoparasitism (8.8%), viral infections (5.96%), bacterial infections (5.4%) and reproductive conditions(3.1%) were most prevalent in goats. The study has shown that endoparasitism, viral infections, bacterial infections and reproductive conditions are the leading problem ravaging small ruminants. Therefore, there is need for urgent intervention with special interest towards ensuring proper animal management to control the effect of these agents. It is recommended that livestock farmers should adopt best management practices that will minimize the vulnerability of small ruminants to disease. More so, there should be mass vaccination campaign against preventable diseases like PPR.*

Keywords**— Disease, goat, prevalence, retrospective study, sheep.**

I. INTRODUCTION

Livestock sectoris one of the major contributors to the overall gross domestic product of most developing nation. It enhances the living of most livestock farmers as it help to generate steady incomes (Ajala *et al.,* 2008). Livestockespecially sheep and goat are very importantto the rural dwellers who rely solely on the turnover from this animals. They are widely distributed in the rural, urban and peri-urban region (Ajala *et al.,* 2008). To a very large extent, they serve as source of employment to an appreciable number of people, such as animal herders, feed millers, butchers, thereby generating wealth and as such contribute to the economy of the nation (Ogbaje *et al.*, 2012). Sheep and goat are very valuable for social function as they are used to fulfil cultural rites during wedding, naming and burial ceremony. Sheep is particularly used during religious festivities, as such they are often regarded as more valuable than goat (Aliyu *et al.,* 2005). Undoubtedly, the contribution of small ruminants to the overall daily protein consumption cannot be underestimated. They serve to augment beef which is the major source of meat for Nigerians (Ajala *et al.,* 2008).However, the small size of the animals and high market price of their meats makes the animals less demanded for regular meat consumption (Lawal-Adebowale, 2012). Nonetheless, little resources is required for purchasing stock animal, land, feed and other necessary requirements needed to start up the production coupled with relatively little risk and tendency to multiply owing to their reproductive efficiency (Omoike, 2006).This makes it more affordable for average poor livestock farmers which contribute larger percentage of the livestock keepers. However, these animals are poorly managed as they are allowed to roam freely on extensive and semi-intensive system. With this system of rearing, the animals are not properly monitored, most often they are faced with malnutrition, exposed to the adversity of extreme weather conditions with little or no access to veterinary care, making them so vulnerable to incidence of various diseases(Lawal-Adebowale,2012).

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Diseases remain one of the major threats to the livestock industry. Livestock animals are constantly being threatened by various livestock diseases which in turn affect their optimal productivity (MacRae *et al.*,2005). This is as a result of its negative effect through morbidities, mortalities and abortions or through, quality and the cost of time and money in management of the diseases (Singh & Prasad, 2008).

Despite this worrisome impact on the economy, high prevalence of livestock diseases has often been reported in developing countries like Nigeria, they are mostly caused by microorganism such as bacteria, viruses, parasites, mycoplasma, ricketsia, protozoan and nutritional or managemental factors (Abiola *et al.,* 2016).For instance, parasitism has been reportedas one of the major agents causing serious problem in ruminant in developing countries especially where nutrition and sanitation are poor Odoi *et al.,* (2008), affecting health of millions of animals causing huge economic loss to livestock farmers (Ahmed *et al.,* 2010). Retrospective study of animal diseases is a rapid and cheap means to identify the strategy for effective disease control when analyzed statistically(Abiola *et al.,* 2016).This underscores the significant of this retrospective study of clinical diseases diagnosed at the State Veterinary Hospital, Ibadan, Nigeria. We envisioned that the data generated would give us the recent picture of pattern of disease occurrence which will be useful for epidemiological surveillance and to formulate policies towards proper intervention for disease control.

II. MATERIALS AND METHODS

Study Area

The study was conducted in Ibadan, the capital city of Oyo State, South-western region of Nigeria. The city lies at latitude 7 ˚23' N and Longitude 3˚ 56'E and it is located at the transition zone between the forest and grassland areas of the country. The state veterinary hospital is the only state government owned veterinary hospital centrally located at Mokola area of the cityand it serve as one of the major veterinary hospital affordable to small scale livestock farmers.

Methodology

This five years retrospective study was conducted based on the clinical record of sheep and goat presented to the State Veterinary Hospital, Ibadan between July 2013 and June 2018. The first part of the clinical case record contains information about the patient and the owner and the second part captures the history relating to the case presented, clinical signs observed, clinical parameter recorded, laboratory investigation conducted, disease diagnosed and treatment instituted. Diagnoses were often made based on history, clinical signs presented and laboratory analysis.

Statistical analysis

Data gathered were analysed based on species and disease conditions using simple descriptive statistic.

III. RESULTS

The result of this retrospective study revealed that overall 520 small ruminant cases were presented to the State Veterinary Hospital, Ibadan Nigeria between July 2013 and June 2018. Out of which, 260(69.2%) of the animal presented were sheep and 160(30.8%) were goats (Table 1).

Common clinical conditions diagnosed were classified according to Abiola *et al.,* (2016); bacterial infection (septicaemia, pasteurellosis, foot rot, tetanus), viral infection (Peste de Petit ruminante PPR, Orf, sheep pox), endoparasitism (helminthosis, haemoparasitism and verminous pneumonia), ectoparasitism (mange, tick, fleas and lice infestation), reproductive conditions (dystocia, placenta retention, uterine prolapse, vaginal prolapse, abortion, pyometra, metritis, vulvitis and mastitis), gastrointestinal conditions (bloat, ruminal impaction and rectal prolapse), musculoskeletal disorders (fracture, arthritis and trauma), respiratory conditions (pneumonia) and other conditions (poisoning, snake bite, malnutrition, conjunctivitis, dog bite, hernia, wound, keratitis, toxicosis and minerals deficiency).

Of the 360 cases of sheep diagnosed, endoparasitism was found to be most prevalent 117(32.5%) followed by viral infections 64(17.8%), bacterial infections 53(14.7%), musculoskeletal disorders 33(9.2%), reproductive conditions 27(7.5%), other conditions 24(6.7%), ectoparasitism 17(4.72%), respiratory condition 16(4.4%) and the least prevalent was gastrointestinal conditions 9(2.5%) (Table2).

Table 3 shows the prevalence of condition diagnosed in 160 goats presented. The result revealed that endoparasitism had the highest prevalence of 46(28.8%), followed by viral infections 31(19.4%), bacterial infections 28(17.5), reproductive conditions 16(10%), ectoparasitism 12(7.5%), other conditions 9(5.6%), musculoskeletal disorders 7(4.4%), gastrointestinal conditions 6(3.8%) while the least prevalent was respiratory condition 5(3.1%).

Table 4 gives the summary of cases diagnosed in sheep and goat presented for treatment at State veterinary hospital, Ibadan, Nigeria between July 2013 and June 2018. The total number of cases presented was 520 which include sheep 260(69.2%) and goats 160(30.2%). The result further revealed that endoparasitism had the highest

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overall prevalence rate of 163(31.3%), followed by viral infections 95(18.3%), bacterial infections 81(15.6%), reproductive conditions 43(8.3%), musculoskeletal disorders 40(7.7%), other conditions 33(6.3%), ectoparasitism 29(5.6%), respiratory infection 21(4.0%) and the least prevalent was gastrointestinal conditions 15(2.9%).

IV. DISCUSSION

From this study, it was revealed that cases of sheep were presented for treatment than goat. The probable explanation for this disparity may be due to the hardy nature of goat compare to the sheep. Goats are reported to be more resistant to common diseases than sheep (Peacock, 2006). It could also implies that more people are keeping sheep compare to the goat probably due to its high market value and the socio-religious value especially during Muslim festive period (Aliyu *et al.,* 2005).This finding is similar with the report of Peter *et al.,* (2015) whose study at the state veterinary hospital, Maiduguri, Nigeria recorded more casesof sheep than goats. It also corroborates Unigwe *et al.,* 2016 who had earlier reported that more cases of sheep were presented to Mokola veterinary hospital between July 2009 and June 2013. However, our finding is in contrast with the work of Abiola *et al.*,(2016) where they reported more cases of goat than sheep at the University of Ibadan veterinary teaching hospital. Meanwhile, our study recorded more cases when compare to the previous work conducted in this location. Unigwe *et al.*,(2016) had reported that a total of271 small ruminant cases were presented to Mokola veterinary hospital from January 2009 to June 2013. This significant increase in cases presented within similar period of study could be ascribed to the palpable increased sensitization by the government and the professional body of veterinarians through mass media and seminars for the livestock owners. This strategy has been proven to improve livestock production and disease management (Buhari *et al.,* 2015).

The current study also found that endoparasitism is the predominant condition affecting sheep and goat, consistent with what was documented in previous reports (Peter *et al.,* 2015; Abiola *et al.,* 2016; Unigwe *et al.,* 2016), these authors have reported endoparasitism as the most prevalent small ruminants disease in their retrospective studies.The preponderance of helminthosis cases among small ruminant could be traced to the nature of the rearing system in this study location where small ruminants are allowed to roam freely during which they are often exposed to this parasitic agent. This system of rearing coupled with malnutrition makes small ruminants more vulnerable to parasitic infection. Parasitism has been reported as one of the major agents causing serious problem in ruminant in developing countries especially where nutrition and sanitation are poor (Odoi *et al.,* 2008). The second most prevalent disease was viral infections predominantly peste des petit ruminante (PPR) infection. This finding is in agreement with the report of Diallo *et al.,* (2007) that PPR disease is enzootic in several countries of West Africa, contributing to high economic loss in small ruminant production. PPR is highly contagious in nature with case fatality rate of 100%, it is therefore a major concern among small scale livestock keepers who rely on small ruminants as sole source of income (Emikpe & Akpavie, 2011). It is a vaccine preventable disease and its vaccine is considered to be one of the most effective vaccines ever produced against animal diseases (Diallo *et al.,* 2007). Therefore, the prevalence of this disease in this location could be due to the fact that majority of the animal affected has no previous exposure to PPR immunization. The next most prevalent condition was found to be bacterial infections. This could also be connected to the free range or extensive system of rearing that predominates in this region. It also corroborates the report of Unigwe *et al.,* (2016), that high prevalence of bacterial infection in small ruminants may be due to the exposure of these animals to kitchen waste, decomposed dead animals and grazing on pastures and rangelands littered with various dead animate objects. Reproductive conditions followed bacterial infections in the order prevalence, with dystocia constituting majority of the reproductive conditions recorded in this study. The high occurrence of this condition is attributed to lack of proper monitoring of female animals especially those at reproductive ages, majority of this farmers has no breeding record, as such the animals are bred indiscriminately and often prematurely leading to dystocia. This is in tandem with the report of Abiola *et al.*,(2016), they reported high prevalence of dystocia as reproductive conditions presented to University of Ibadan veterinary teaching hospital.We also found that musculoskeletal disorder cases were moderately high and trauma (fractures) was the leading cause. This could be easily linked to the fact that small ruminants are often left unguided while they scavenge or graze around, thereby making them more vulnerable to automobile accidents. The least prevalent condition in this study was gastrointestinal conditions such as bloat and other conditions (poisoning, snake bite, malnutrition, conjunctivitis, dog bite, hernia, wound, keratitis, toxicosis and minerals deficiency). This observation is also consistent with the report of Abiola *et al.,* (2016), and this could mean that the owners have been

managing these cases with usage of ethno-veterinary medicine (Sandabe *et al.*, 2006).

V. CONCLUSION

In this study, it is evident that endoparasitism, viral infections, bacterial infections and reproductive conditions are the leading problem ravaging small ruminants. This therefore calls for urgent intervention with special interest towards ensuring proper animal management to control the effect of these agents. It is recommended that veterinary services should be strengthened, accessible and affordable for low income livestock farmers. Mass vaccination against preventable disease like PPR should be routinely done. Livestock farmers should adopt best management practicesthat will minimize the vulnerability of small ruminants to disease. More so, livestock farmers should be sensitized on importance of keeping farm record especially breeding recordin order to mitigate the effect of economic loss associated with these conditions.

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Table 1: Prevalence of small ruminants presented to the StateVeterinary Hospital in Ibadan, Nigeria between July 2013 and June 2018.

Species	Number	Prevalence (%)
Sheep	360	69.2
Goat	160	30.8
Total	**520**	**100**

Table 2: Prevalence of condition/diseases of sheep presented tothe StateVeterinary Hospital in Ibadan, Nigeria between July 2013 and June 2018.

Diseases	Number of cases	Prevalence (%)
Bacterial	53	14.7
Viral	64	17.8
Endoparasitism	117	32.5
Ectoparasitism	17	4.12
Reproductive	27	7.5
Gastrointestinal	9	2.5
Respiratory	16	4.4
Musculoskeletal	33	9.2
Others	24	6.7
Total	**360**	**100**

Table 3: Prevalence of condition/diseases of goat presented tothe State Veterinary Hospital in Ibadan, Nigeria between July 2013 and June 2018.

Diseases	Number of cases	Prevalence (%)
Bacterial	28	17.5
Viral	31	19.4
Endoparasitism	46	28.8
Ectoparasitism	12	7.5
Reproductive	16	10
Gastrointestinal	6	3.8
Respiratory	5	3.1
Musculoskeletal	7	4.4
Others	9	5.6
Total	**160**	**100**

Table 4: Summary of prevalence of condition/diseases of sheep and goat presented tothe StateVeterinary Hospital in Ibadan, Nigeria between July 2013 and June 2018.

Diseases	Sheep(%)	Goat (%)	Total (%)
Bacterial	53(10.2)	28(5.4)	81(15.6)
Viral	64(12.3)	31(5.96)	95(18.3)
Endoparasitism	117(22.5)	46(8.8)	163(31.3)
Ectoparasitism	17(3.3)	12(2.3)	29(5.6)
Reproductive	27(5.2)	16(3.1)	43(8.3)
Gastrointestinal	9(1.7)	6(1.2)	15(2.9)
Respiratory	16(3.1)	5(0.96)	21(4.0)
Musculoskeletal	33(6.3)	7(1.3)	40(7.7)
Others	24(4.6)	9(1.7)	33(6.3)
Total	**360(69.2)**	**160(30.8)**	**520(100)**