

A RETROSPECTIVE STUDY ON THE OCCURRENCE OF INFECTIOUS BURSAL DISEASE IN ORLU, IMO STATE, NIGERIA.

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ABSTRACT

Incidences of Infectious Bursal Disease (IBD) in broiler flocks are common in Nigeria with consequences of high morbidity and mortality, high treatment costs, and decreased production potentials in affected flocks. In this study factors that influence the incidences of IBD in broiler farms were retrospectively investigated using Orlu Zone, Imo State as a case study. The study period is one year; (September 2011 to August 2012). A total of 30 cases were reported from data obtained from questionnaire forms and flock records. The disease showed seasonal variations with highest occurrences during the early rainy season and the lowest in the early dry periods of the year. The occurrence of the disease was affected by management factors with farms using deep litter system recording the highest occurrences. Apparently the educational background of farmers also affected the incidence rate of the disease with the highest reported cases amongst First School Leaving Certificate (FSLC) holders. Farmers showed preference for veterinary medical interventions than for self medication and other forms of interventions like consulting friends and other farmers. Results from the study showed that the incidence of infectious bursal disease varied according to seasons and according to management practices and was influenced by educational background of farmers. It also showed that effective control measures may be hinged on willingness of farmers to seek qualified medical (Veterinary) intervention. Therefore control and monitoring measures for IBD must invariably put into consideration factors such as season, management practices in use and farmer's educational background.

Keywords: Infectious Bursal Disease, Incidences, Frequencies, Control.

INTRODUCTION

Infectious Bursal Disease (IBD) is an acute, highly contagious viral infection of young chickens that has lymphoid tissue as its primary target with a special predilection for the bursa of Fabricius (cloacal bursa) (Van den Berg *et al.*, 2000; Cosgrove, 1962). This is the main reason behind its immunosuppressive characteristics. In the late 1980s, very virulent strains of IBDV (vvIBDV) were isolated in Europe (Netherlands) (Etteradossi *et al.*, 1999), and these

strains quickly spread to Africa, Asia, and South America (Hirai *et al.*, 1972). In a survey by OIE in 1999, IBD topped the list of the most serious poultry disease in the poultry industry world wide (Van den Berg *et al.*, 2000). IBD remains one of the commonest and most dreaded (Oluwayelu *et al.*, 2014) avian diseases encountered by poultry farmers in Nigeria. Infectious bursal disease is highly contagious, and the virus is known to be persistent in the environment of a poultry house. The virus has been known to survive for four months in contaminated bedding and premises (Benton *et al.*, 1967). Losses due to the disease can be devastating with far reaching consequences to the farmer's investments. Routine vaccination programmes remains one of the strongest control measures for the disease (Elankumaram *et al.*, 2006). However, occurrences and results of control measures for IBD can be varied and sometimes unpredictable especially without good quarantine and proper biosecurity ((Elankumaram *et al.*, 2006)). In the absence of effective cleaning, disinfection and insect control, the resistance of the virus can lead to perennial contamination of infected farm buildings (Van den Berg *et al.*, 2000).

This study sought to investigate the factors that influence the occurrences of IBD in Nigeria using farms in the Orlu zone of Imo State, Nigeria as a case study.

MATERIALS AND METHODS

Study Area: The study covered the 12 Local Government Areas of Orlu (05°47'47"N and 07°02'20"E) in Imo State, Southeastern Nigeria. Imo State itself lies within latitudes 4°45'N and 7°15'N, and longitude 6°50'E and 7°25'E.

Study Period: This was a retrospective study covering the period from September 2011 - August 2012.

Data collection: Five farms in each of the 12 Local Government Areas were randomly sampled. Farm record books were reviewed and questionnaires also distributed in each farm. Oral Interviews were conducted with farm staff including veterinarians, farm managers and attendant in each farm.

Data analysis: The data obtained were analyzed using Descriptive statistics (i.e. frequency and

percentages) and the results were presented as graphs.

RESULTS

A total of **30** cases were recorded from the retrospective review of September 2011 to August 2012 farm records of farms in the 12 Local Government Areas of Orlu, Imo State. Results of the

analyses of the data as presented below showed how different factors affected the frequency of occurrence of Infectious Bursal Disease (IBD) in Orlu zone.

According to the study, there were variations in the occurrence of Infectious Bursal Disease in Orlu in Imo state over the 12-month study period (Fig 1) with the disease showing highest occurrences during the rainy season (Fig 2).

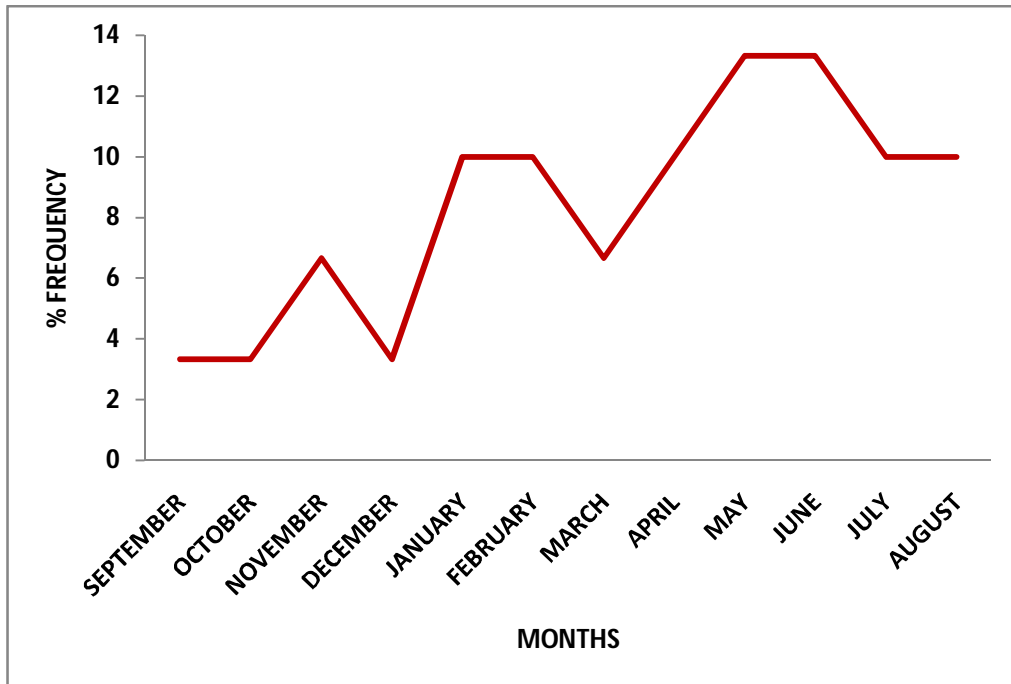


Fig 1: Pattern of incidence of IBD in Orlu in Imo state over the 12-month study period.

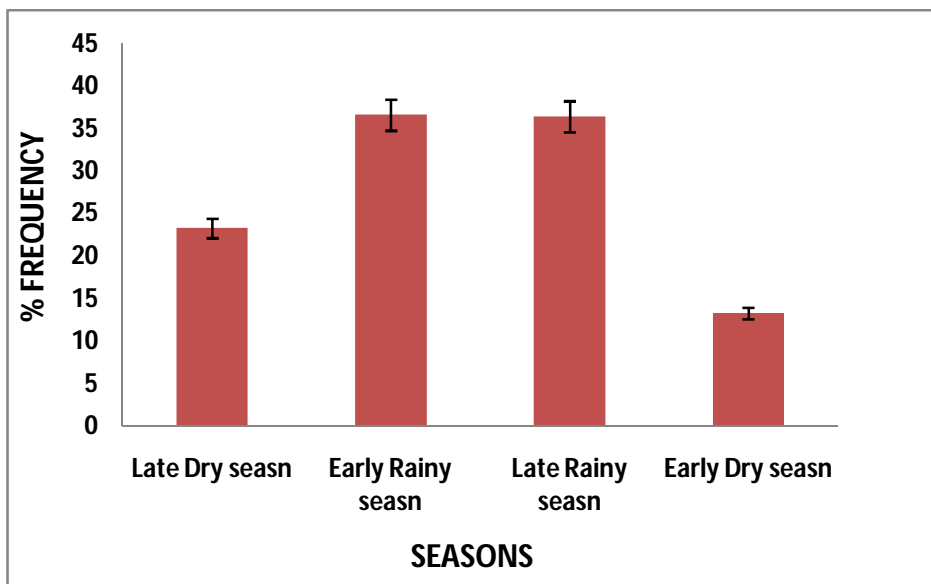


Fig 2: Frequency distribution of IBD in Orlu in Imo state during the different Seasons of the year.

Analysis of the management practices used by farmers (Fig 3), revealed that farms using the deep litter housing system recorded the highest cases of IBD (66.61 %) followed by battery cage systems

(19.98 %), while farms managed by FSLC holders recorded the lowest occurrence of IBD (13.22 %) (Fig 4), with tertiary institution graduates recorded the highest cases (33.3 %). Both SSCE holders and

those with technical agricultural training recorded the same rate (26.64 %).

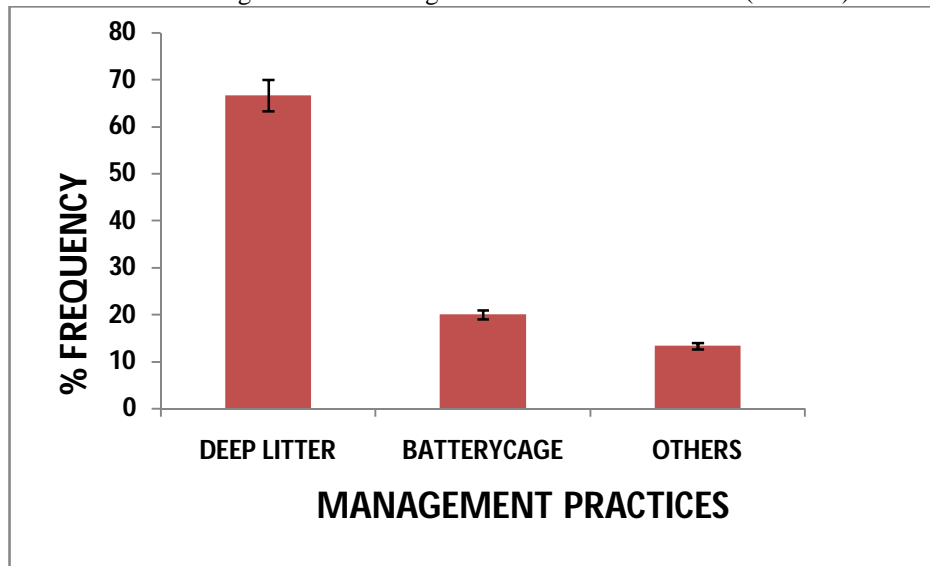


Fig 3: Management systems used by farmers in Orlu in Imo state and the frequency distribution of IBD in the zone. (NB: Others include semi-intensive, free range, etc.)

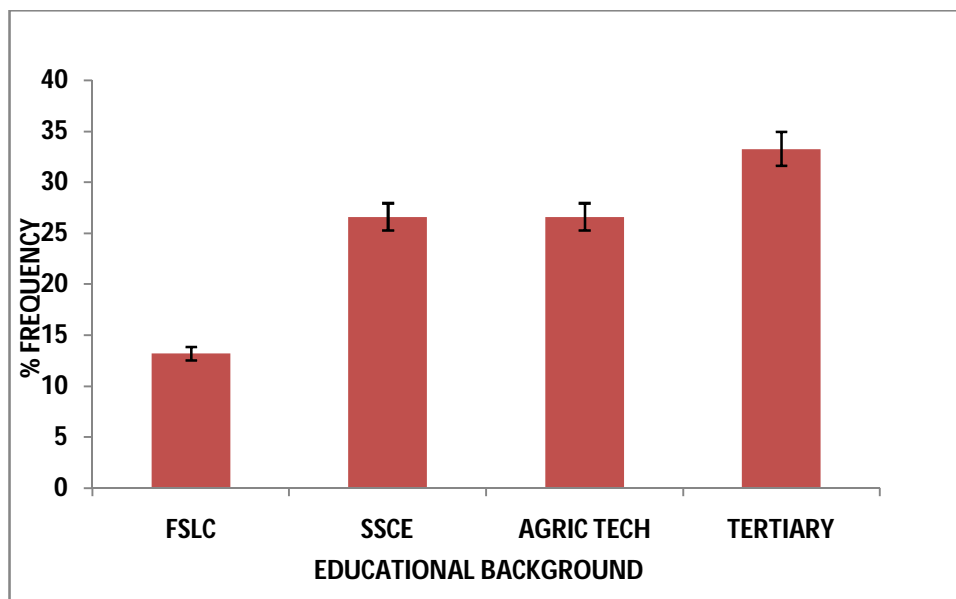


Fig 4: Relationship between educational background of farmers in Orlu in Imo state and the frequency of occurrence of IBD in the zone

Large farms of over 1000 birds fared much better with an occurrence of 13.32 % (Fig 5), followed by medium-sized farms (500-1000 birds) with 19.98 %. The small scale farms of less than 500 birds recorded the highest occurrence with 66.6 %.

DISCUSSION

Variations observed in the monthly occurrence of Infectious Bursal Disease (Fig 1) over the study period is perhaps not surprising considering the changes in the ambient weather that takes place over 12 months. These changes in weather will influence the microbial environment and subsequently its population and will also put a strain on the

management of the farms as the system as well as the birds seeks to adapt or cope. This will be particularly so as the housing system used in all the farms as observed in the study is the open house type that expose birds to weather stressors. The highest occurrence for IBD over the 12-month study period observed in the rainy season (Fig 2) may be due to increased immunologic challenge. Obviously, the wetness and resultant high humidity of the environment that goes with the rainy periods of the year favours the microbial and parasitic burden and would have increased the challenge on the immunologic system of the birds. Similar observation of peak prevalence during the rainy

season was observed by Saidu *et al.* (1994). According to Van den Berg *et al.* (2000), the most likely sources of contamination of IBD occur during commercial trade of poultry products (live animals and poultry meat) as vertical transmission of the disease has not been reported and horizontal transmission due to external contamination of eggshells has also not been documented. This commercial trading in broiler Day-old chicks in

Nigeria, which targets the festive periods, and occurs majorly around the months of September (i.e. rainy season) may thus be a contributing factors towards the increased rate of occurrence of the disease recorded during this period of the year. Nwanta *et al.* (2006) attributed highest prevalence of Newcastle Disease (ND) during the dry season to peak movement of birds for sale during festivities.

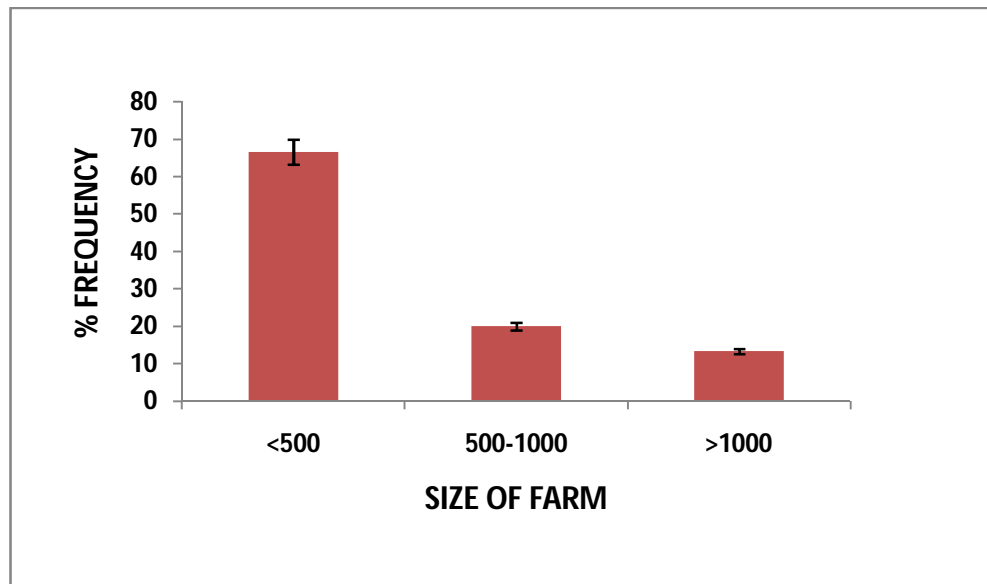


Fig 5: Frequency distribution of IBD according to Farm sizes in Orlu, Imo state.

The high incidences recorded for deep litter management system (Fig 3) over Battery cage and other management styles could also be due to exposure of birds to increased viral load in the litter. Infected subjects excrete the virus in faeces as early as 48 h after infection, and may transmit the disease by contact over a sixteen-day period (Vindevogel *et al.*, 1976). The disease is transmitted by direct contact with excreting subjects, or by indirect contact with any inanimate or animate (farm staff, animals) contaminated vectors (van den Berg *et al.*, 2000). Elevated ammonia levels, accumulated litter materials and high relative humidity, all of which are possible stress factors were observed in some flock houses with deep litter management system during farm inspection.

The study also interestingly revealed lowest frequency of occurrence of IBD among first school leaving certificate (FSLC) holders and highest with graduates (Fig 4). This could be because unlike their counterparts with higher educational exposure, FSLC holders are less likely to differentiate diseases in birds. It could also be that being much less formally educated; they are more likely to report for professional (Veterinarians) advice in the prevention and control of diseases affecting their farms.

The observation that farms with flock sizes above 1000 birds recorded significantly less incidences of the disease than those with flock sizes less than 500

(Fig 5) is perhaps also not surprising since 1000 birds and above represent a significantly greater investment than 500 birds and thus such farms are more likely to afford and implement stricter control measures such as strict vaccination programmes and tougher bio-security protocols.

CONCLUSION AND RECOMMENDATIONS

According to the study, outbreaks of Infectious Bursal Disease are affected by season of the year, management practices in place and educational level of farm owners.

Thus effective control measures for Infectious Bursal Disease must take these factors into consideration.

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