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Research Article

Prevalence of Poultry (*Gallus domesticus*) Diseases in Southern Somalia

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Received: September 21, 2020; **Published:** October 22, 2020

Abstract

A retrospective study was designed to investigate the prevalence of poultry diseases in southern Somalia (Mogadishu, Baidoa and Kismayo Cities) from January 2018 to August 2020. A total of 4042 diseased cases were recorded, among them the prevalence of viral diseases was noticed higher in all three Cities (Mogadishu City: 37.36%, Baidoa City: 39.53% and Kismayo City: 46%) followed by bacterial disease, parasitic disease and non-infectious disease (Mogadishu City: 30.64%, 17.25%, 14.42%, Baidoa City: 32.11%, 14.84%, 12.19% and Kismayo City: 30.39%, 14.93%, 10.28% respectively). As far we know, no such report was published yet so we conduct this study which may help in developing control strategies against poultry diseases and formulating the policy at government level in future.

Keywords: *Bacterial Infection; Parasitic Infection; Poultry Disease; Somalia; Viral Infection*

Abbreviations

FAO: Food and Agriculture Organization of the United Nations; SPSS: Statistical Package for the Social Science; ND: Newcastle Disease

Introduction

Poultry, also recognized as universal food, as poultry meat and eggs enjoy zero religious' restrictions, unlike pork and beef [1]. Being universal and accepted by all religions, the demand of poultry increased globally hence the trend of rearing is also increased. Poultry meat and eggs are main source of protein, household nutrition and income in developing countries [2]. In Somali economy, still the Livestock sector act a crucial component and become a backbone [3]. Like other countries, the poultry production in Somalia is also an important component of the livestock sub-sector. Development of the poultry sub-sector contribute in income foreign currency, employment, food and nutrition security, and women's economic employment in rural areas. In Somalia, Poultry keeping is widespread among poor households and now commercial poultry farming is also on the rise, particularly in urban areas [4].

Common poultry diseases available around the globe are fowl pox, Newcastle disease, infectious bronchitis, avian influenza, aspergillosis, Marek's disease, infectious bursal disease, lymphoid leukosis, fowl cholera, omphalitis, pullorum, necrotic enteritis, ulcerative enteritis, *Staphylococcus, Salmonella, Campylobacter* [5].

Objective of the Study

The main objective of our study is to figure out the prevalence of commonly seen poultry diseases which cause economic loss to the small-scale farmers as well as in commercial farms. As far we know, no such report was published yet so we conduct this study which may help in developing control strategies to mitigate poultry diseases and formulating the policy at government level in future.

Materials and Methods

Study animal, population, period and location

A total of 4042 poultry (*Gallus domesticus*) reared from January 2018 to August 2020 in the southern Somalia (Mogadishu, Baidoa, and Kismayo Cities) was considered to figure out the prevalence of poultry diseases. The geographical description of study location is in figure 1.

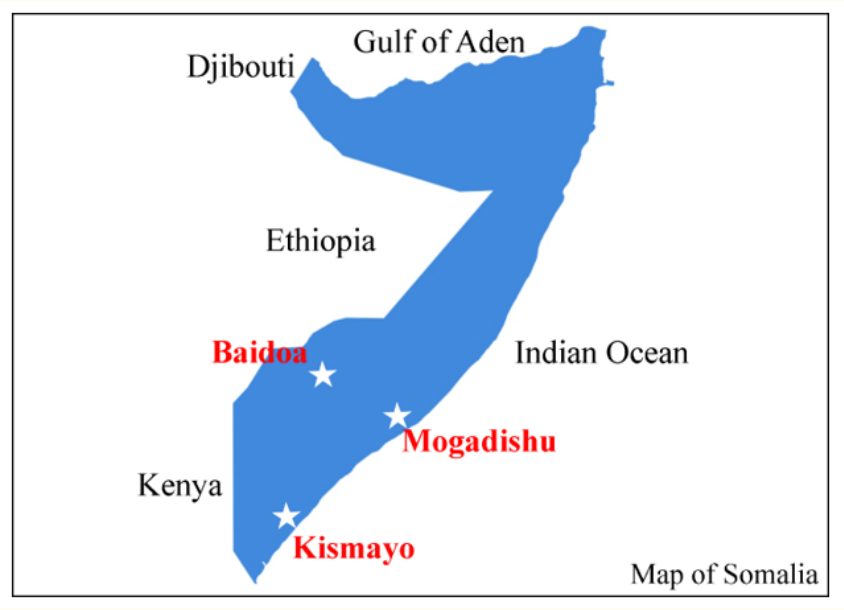

Figure 1: *Map of Somalia showing the study area.*

Data collection

Clinical records of cases diagnosed at Horn Africa Poultry Association Network were collected for the study. A case was characterized as a farm that reported an outbreak of a disease and was analyzed depend on history, clinical signs and symptoms, postmortem findings, and laboratory results.

Statistical analysis

Collected data were organized in Microsoft Excel sheet and then moved to the SPSS 20.0 sheet to scrutinize the prevalence and percentage of prevalence of collected data of poultry diseases.

Results

Prevalence of poultry diseases in Mogadishu, Somalia

A total of 1449 cases of poultry diseases were documented from January 2018 to August 2020 and individual prevalence is presented in table 1. Among them prevalence of viral diseases is at highest level (37.68%, n = 546) followed by bacterial diseases (30.64%, n = 444), parasitic disease (17.25%, n = 250) and non-infectious disease (14.42%, n = 209).

Diseases	2018	2019	2020	Total (%)
Parasitic Diseases (n = 250)				
Helminthosis	12	5	0	17 (1.17%)
Ectoparasitism	0	11	4	15 (1.04%)
Coccidiosis	71	105	42	218 (15.04%)
Viral Diseases (n = 546)				
Newcastle Disease	49	67	56	172 (11.87%)
Fowl pox	51	73	22	146 (10.08%)
Infectious Bursal Disease	47	28	15	90 (6.21%)
Avian influenza	31	25	0	56 (3.86%)
Marek's disease	21	32	29	82 (5.66%)
Bacterial diseases (n = 444)				
Fowl cholera	58	83	13	154 (10.63%)
Pullorum disease	32	29	21	82 (5.66%)
Colibacillosis	40	25	14	79 (5.45%)
Fowl typhoid	80	39	10	129 (8.90%)
Non infectious disease	109	80	20	209 (14.42%)
Total	601	602	246	1449 (100%)

Table 1: *Prevalence of poultry diseases in Mogadishu, Somalia from January 2018 to August 2020.*

Prevalence of poultry diseases in Baidoa, Somalia

A total of 1280 cases of poultry diseases were documented from January 2018 to August 2020 and individual prevalence is shown in table 2. Among them prevalence of viral diseases is at highest level (39.53 %, n = 506) followed by bacterial diseases (32.11%, n = 411), parasitic disease (14.84%, n = 190) and non-infectious disease (12.19%, n = 156).

Diseases	2018	2019	2020	Total (%)
Parasitic Diseases (n = 190)				
Helminthosis	0	0	0	0 (0.00%)
Ectoparasitism	10	8	1	19 (1.48%)
Coccidiosis	81	36	54	171 (13.36%)
Viral Diseases (n = 506)				
Newcastle Disease	46	28	37	111 (8.67%)
Fowl pox	31	19	17	67 (5.23%)
Infectious Bursal Disease	106	11	33	150 (11.72%)
Avian influenza	41	36	0	77 (6.02%)
Marek's disease	70	22	9	101 (7.89%)
Bacterial diseases (n = 411)				
Fowl cholera	67	25	31	123 (9.61%)
Pullorum disease	38	53	19	110 (8.59%)
Colibacillosis	65	21	33	119 (9.30%)
Fowl typhoid	31	18	10	59 (4.61%)
Non infectious disease	92	45	19	156 (12.19%)
Total	678	322	280	1280 (100.00%)

Table 2: *Prevalence of poultry diseases in Baidoa, Somalia from January 2018 to August 2020.*

Prevalence of poultry diseases in Kismayo, Somalia

A total of 1313 cases of poultry diseases were documented from January 2018 to August 2020 and individual prevalence is presented in table 3. Among them prevalence of viral diseases is at highest level (46.00%, n = 604) followed by bacterial diseases (30.39%, n = 399), parasitic disease (14.93%, n = 196) and non-infectious disease (10.28%, n = 135).

Diseases	2018	2019	2020	Total (%)
Parasitic Diseases (n = 196)				
Helminthosis	18	0	3	21 (1.60%)
Ectoparasitism	0	7	6	13 (0.99%)
Coccidiosis	59	78	25	162 (12.34%)
Viral Diseases (n = 604)				
Newcastle Disease	76	40	32	148 (11.27%)
Fowl pox	57	20	67	144 (10.97%)
Infectious Bursal Disease	54	65	42	161 (12.26%)
Avian influenza	24	15	0	39 (2.97%)
Marek's disease	60	19	33	112 (8.53%)
Bacterial diseases (n = 399)				
Fowl cholera	51	29	73	153 (11.65%)
Pullorum disease	42	30	25	97 (7.39%)
Colibacillosis	39	19	21	79 (6.02%)
Fowl typhoid	33	15	22	70 (5.33%)
Non infectious disease	81	37	17	135 (10.28%)
Total	594	374	345	1313 (100%)

Table 3: *Prevalence of poultry diseases in Kismayo, Somalia from January 2018 to August 2020.*

Comparison of prevalence of poultry diseases in the selected three regions of Somalia

The prevalence of poultry disease on the basis of disease category and City is shown in figure 2. The prevalence of parasitic disease is higher in Mogadishu City (17.25) followed by Kismayo City (14.93%) and Baidoa City (14.84%). In term of viral disease, higher prevalence is seen in Kismayo City (46%) followed by Baidoa City (39.53%) and Mogadishu City (37.68%). The prevalence of bacterial disease is higher in Baidoa City (32.11%) followed by Mogadishu City (30.64%) and Kismayo City (30.39%). In the aspect of non-infectious disease, higher prevalence is noticed in Mogadishu City (14.42%) followed by Baidoa City (12.19%) and Kismayo City (10.28%).

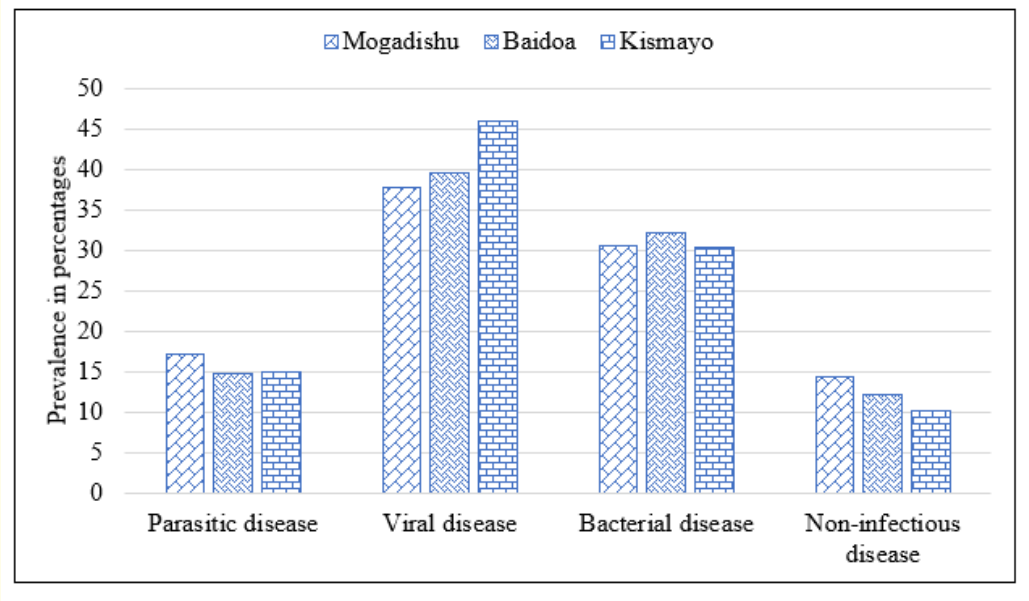

Figure 2: *Comparative prevalence of poultry diseases in selected Cities of Somalia.*

Discussion

In comparison of all three selected Cities of southern Somalia, Viral diseases encounter higher prevalence and among them Newcastle Disease is in top. ND is one of the important avian viral disease globally due to its devastating effect on the poultry industry in context to economic [6,7]. This can produce mortality of up to 100% among infected population of birds [8,9] and also the prognosis is not so good once get infected. The possible reason of being higher prevalence might be as, poor vaccine quality, unsuitable vaccination schedule or vaccination techniques, expired vaccine, wrong storage temperature etc. Similarly, the prevalence of Fowl pox, Infectious Bursal Disease, and Marek diseases is also seen more or less high but the prevalence of Avian Influenza is low in all selected City, this might be due to the media advertisement on avian influenza and the need for reporting of cases of flock mortalities [10].

Among the bacterial disease, Fowl cholera encountered the highest prevalence is the selected study area followed by Pullorum disease, Colibacillosis and Fowl typhoid. The higher prevalence of these bacterial diseases in poultry in selected area might be due to poor hygienic management of the farm, supply of contaminated feed and water [11] and also not maintaining the proper biosecurity.

The protozoan disease of clinical consideration in the selected study area is Coccidiosis. The organism is accessible wherever chickens are raised and serious assault of coccidiosis can cause loss of weight, morbidity and mortality [12]. Such protozoal disease can create problem in gut health and making the gut susceptible to other infections including *Clostridium perfringens* [13]. Such poultry diseases can be controlled using adequate amount and strains of probiotic, as per the study suggested by Jha *et al*. [14].

Conclusion

The high prevalence of poultry diseases reported at the study area may be attributed to the fact that poultry farmers need to vaccinate their birds against the poultry diseases with quality vaccine at appropriate time and also increase the usage of disinfectants and sanitizers to mitigate the prevalence of diseases that were reported.

Acknowledgements

The authors would like to acknowledge Mr. Abdulla Hassan Ahmed, CEO of Horn Africa Poultry Association Network (HAPAN), Mogadishu, Somalia for helping in data collection.

Conflict of Interest

The authors declare that there is no conflict of interests regarding the publication of this article.

Authors contribution

Abdiaziz Idiris Mohamud and Pravin Mishra authors contributed equally.

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Volume 5 Issue 11 November 2020