

# Assessment of Major Constraints of Small Scale Intensive Chicken Farms in and around Nekemte, Oromia, Ethiopia

Gemechis Regasa\*, Hagazi Fantay Tadesse and Getachew Derbew Belay

Medical Doctor at Hospital for Special Surgery, Ethiopia

## Abstract

A cross sectional study was conducted from November 2016 to April 2017 with the objective of identifying the major constraints of small scale intensive chicken farms in and around Nekemte. All available small scale intensive chicken farms at Nekemte (n=43) were assessed. Data were collected using a semi structured questionnaire on possible chicken farm constraint from chicken farm workers up on interview. Recorded data were entered to Microsoft excel sheet and analyzed by descriptive statistics. Disease, Chicken feed, farm management and market were the major constraints. Newcastle disease has been identified as the most prevalent disease (occurred in 37.2% farms) followed by fowl cholera (13.9%) with Marek's disease being the least (6.97%). High price of chicken feed (in 53.4% farms) and shortage in supply (in 11.6% farms) were identified as feed related challenges. 55.81% chicken farms used pot charcoal to brood chicken during early stages. Chicken farms have also faced market challenges due to longer fasting periods (in 30.23% farms), inappropriate market chain (in 25.58% farms) and low price of chicken products as compared to costs for production (in 20.93% farms). In general, assessed small scale intensive chicken farms were having constraints related with disease, chicken feed, management and market. Therefore, government should encourage chicken feed manufacturers, increase veterinary service, design appropriate market chain and provide trainings to farm workers on farm management practices in order to minimize chicken farm constraints and assure feed security in general.

**Keywords:** Chicken • Constraint • Small Scale

## Introduction

Livestock production is a component of agriculture activity that covers 40% of agricultural output. As part of livestock production, poultry production is an important production activity in almost all developing and developed countries. It is the fastest growing component of livestock production system and has a great contribution to the sector and improves the living standards of the poor livestock keepers [1]. This is mainly due to the quick return on low investment with short generation interval and fast reproduction cycle compared to most other livestock [2].

The global poultry population has been estimated to be about 16.2 billion, with 71.6 % in developing countries, producing 6.7 million metric tons of chicken meat and 5.8 million metric tons of hen eggs [3]. In East Africa over 80% of human population live in rural areas and over 75% households keep indigenous chickens, the remaining keeps exotic and hybrids [4]. Ethiopia has 56, 866,719 poultry population of which 54,510,523 (95.86%) indigenous, 770,052 (1.35%) exotic and 1,586,144 (2.79%) hybrid [5].

In Ethiopia, chickens are the most widespread and almost every rural family owns chickens, which provide a valuable source of family protein and income [6]. As compared to other livestock, chickens give immediate source of cash income, provide egg in addition to meat for household consumption, are source of organic fertilizer, require low initial capital investment, small land

and low labor input, are efficient feed converters and have a wide range of adaptability for different agro-ecologies [2].

However, according to [7], there are a number of constraints limiting the success and profitability of chickens kept under both traditional and modern production system in Ethiopia. In Ethiopia, the poultry sector has been adversely affected by a variety of constraints. [8] have identified critical constraints as disease, predators, poor feeding and poor marketing information and replacement of indigenous chickens by exotic chicken breeds. According to [9] and [10] poultry feed and nutrition is one of the most critical constraints to poultry production under both the rural small holder and large-scale systems in Ethiopia.

In the last decade, there is an extension and wide spread of small scale intensive chicken farms in urban and rural areas due to government initiatives as a means for food self-sufficiency programs. However, the contribution gained from the sector for house hold consumption, income generation and to the national economy is not what it has to be due to several constraints. Therefore, the objective of the present study is to identify the current major constraints of small scale intensive chicken farms at the present study area.

## Materials and Methods

### Study area

Subjects who were suspected to suffer from IJVS were retrospectively recruited from neurology and neurosurgery department of Xuanwu Hospital from January 2015 to December 2020. Inclusion criteria were as follows: 1) No past medical history of central nervous system diseases; 2) No intracranial lesions on cranial magnetic resonance imaging; 3) No dysplasia or focal stenosis in intracranial sinuses, J2 and J3 segment of IJV. 4) No acute or chronic heart failure. This study was approved by the ethnic committee. All subjects enrolled in this study gave their informed consent.

### Study design

A cross-sectional study was conducted on n=43 chicken farms at Nekemte with the objective of assessing small scale intensive chicken farm constraints. A semi structured questionnaire which includes: farm name, farm worker and

\*Address for Correspondence: Gemechis Regasa, Medical Doctor at Hospital for Special Surgery, Ethiopia; Tel: + 251912289921, E-mail: janvet046@gmail.com; regasageme21@gmail.com

Copyright: © 2022 Regasa G, et al. This is an open-access article distributed under the terms of the creative commons attribution license which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Date of Submission: 09 August, 2022, Manuscript No. jvst-22-72956; Editor assigned: 11 August, 2022, PreQC No. P-72956; Reviewed: 17 August, 2022, QC No. Q-72956; Revised: 23 August, 2022, Manuscript No. R-72956; Published: 30 August, 2022, DOI: 10.37421/2157-7579.2022.13.141.

farm constraints (feed, disease, management and market) were prepared for data collection from farm workers up on interview.

### Sampling method and data collection

Due to the limited number of chicken farms, all available chicken farms were included in the present study. Data was collected from all available small scale intensive chicken farms (n=43) at Nekemte and surroundings using questionnaire and upon interviews made with farm workers.

### Data Analysis

Data was entered to Microsoft excel spread sheet and overall prevalence of each constraint was calculated using descriptive statistics.

## Results

All assessed small scale intensive chicken farms (n=43) were having health care, feed, management and market constraints. In this study, Newcastle disease (NCD), fowl cholera, coccidiosis, fowl pox, fowl typhoid, Infectious Bursal Disease (IBD) and Marek's disease (MD) in order were the major disease constraints in most assessed chicken farms. High feed cost and shortage in supply were feed related challenges. Most chicken farms also lack electric power for brooding and used pot charcoal instead. Market is also a major challenge in most assessed chicken farms due to inappropriate market chain, long fasting periods, low customer and low price of products as compared to costs for production. Detail results are shown in the following Tables 1-5.

Newcastle diseases is the most prevalent (occurred in 37.2% farms) followed by fowl cholera (13.9%), coccidiosis (11.6%), fowl pox (9.30%), IBD (11.6%), fowl typhoid (9.30%), and Marek's disease (MD) (6.97%) respectively as indicated in Table 1. Of assessed chicken farms, 53.4% farms don't use commercial feed due to high price of chicken feed from chicken feed producers. In 11.6% farms, feed challenges are reported due to shortage in supply. In 34.9% assessed farms, both shortage in supply and high price of feed were main feed constraints in Table 2. 62.79% chicken farm workers provide feed three times per day while the remaining (37.21%) chicken farmworkers supply feed to chickens only twice per day (Table 3). As indicated in Table 5, market constraints are mainly due to long fasting periods (30.23%) followed by inappropriate market chain (25.58%). Low price of products as compared to costs for production (23.25%) have also impacted for market.

**Table 1.** Disease frequency in assessed chicken farms.

Assessed chicken farms	Disease constraints						
	NCD	Fowl cholera	Coccidiosis	Fowl pox	IBD	Fowl typhoid	MD
43	16	6	5	4	5	4	3

**Table 2.** Feed constraints.

Assessed chicken farms	Feed constraints		
	High price feed	Shortage in supply	both
43	23	5	15

**Table 3.** Feeding frequency.

Assessed chicken farms	Feeding frequency	
	2 times/day	3 times/day
43	16	27

**Table 4.** Brooding system.

Assessed chicken farms	Brooding system	
	With electrical power	With pot charcoal
43	19	24

**Table 5.** Market constraints.

Market Constraints				
Assessed chicken farms	Low number of customers	Low price of products	Inappropriate market chain	Long fasting periods
43	9	10	11	13

## Discussion

Feed availability in a fair price is the most important factor in chicken productivity as well as chicken farm sustainability as feed contributes 60-70% of farm cost. In the present study, 53.4% chicken farms faced feed constraints due to high price of chicken feed as compared to costs for production. Transport cost of chicken feed from feed source to chicken farms is main contributor for the high price as the distance between farms and source of feed supply is too long. This agrees with the reports of [11-15] who reported high price of feed as a major constraint encountered by the small scale intensive poultry farms in Addis Ababa, Botswana, Ghana and Gujarat respectively. In the present finding, about 11.6% farms encountered shortage in supply of chicken feed.

In another report from [16-19], shortage in the supply of protein supplements of animal origin has made the price of abattoir by products extremely high and Prices of mixed feed remains unduly high even at times when the price of the major component of mixed rations (e.g. corn) fall by more than 50%. In the present study, 34.9% assessed farms faced both shortage in supply and high price of feed. Similarly, [18] in Nigeria reported that the price per bag and poor road network (market access condition) were the major problems affecting efficient marketing of poultry feeds.

Appropriate feeding frequency for chicken is three times per day where quality and quantity of chicken feed is fulfilled. In the present study, 62.79% of the assessed chicken farms provide chicken feed three times per day. This indicates that, there is still a gap in feeding frequency that can impact the productivity of the chicken. Contrary to the present finding, [19] reported, three times a day chicken feed supply in only 13.3% assessed farms. The author highlighted that this is due to lack of availability of commercial feed supply, remoteness of the area and transportation problem.

In Ethiopia, the price, demand and supply of chicken are highly related to religious festivals, mainly Christian festivals where the profitability of many farms depend and dynamics of farm management required. In the present study, 30.23% farms faced market challenges due to long fasting periods [1] also reported similar finding that religious festival days are associated with increased poultry consumption and sales and decreased during fasting periods directly related to the Orthodox Christian fasting months reported in North-west part of Amhara, Ethiopia.

The present study revealed that, there is no formal poultry and poultry product marketing channel in the study areas and informal marketing of live birds and eggs involving open markets are common. Of the assessed chicken farms, 25.58% faced inappropriate market chain. Farmers sell chicken to small retail traders. In most developing and under developed countries, electric power supply to farms is either limited or frequently interrupted especially in rural and peri-urban areas. In this study, 55.81% farms use pot charcoal for brooding chicken at early stages due to lack of electrical access.

Disease has been the main cause and risk factor in many poultry farms for death, reduced production and productivity in many countries especially where veterinary service is limited. In Africa one of the major constraints to small scale intensive chicken farms is the prevalence of various diseases. In the present study, NCD (locally named "fengle" or "cudum") is the most prevalent and economically important (in 37.2% farms) devastating disease problem in the area. This is in line with the study done by [20] in Swedish University of Agricultural Science, and Uppsala, Sweden, that NCD as the most important disease and considered to be a major constraint to the development of both village and commercial chicken industry in Africa. In this study, Infectious Bursal Disease (IBD), fowl cholera (in 13.9% assessed farms), coccidiosis (in 11.62%) causes significant loss. Similarly, [21] in shashamane and Adami Tulu reported 11.8% of coccidiosis prevalence.

## Conclusion and Recommendation

Most assessed small scale intensive chicken farms in this study are affected by one or more farm constraints. Newcastle disease is the most prevalent disease followed by fowl cholera. High cost feed, shortage in supply and gap in feeding frequency are identified as feed related and management farm constraints. Most chicken farms have used pot charcoal as a brooder due to lack of access to electric power. Long fasting periods, inappropriate market chain, low price of products as compared to costs for production are among market constraints of chicken farms in this study. Therefore, based on the above conclusion, the following recommendation is forwarded.

Government should encourage chicken feed manufacturers, increase veterinary service, design appropriate market chain and provide trainings to farm owners on farm management practices in order to minimize chicken farm constraints and assure food security in general.

## References

- Moges, F. A. "Studies on production and marketing systems of local chicken ecotypes in Burie Wereda, north west Amhara." PhD diss., Hawassa University, 2009.
- Teklewold, Hailemariam, Legesse Dadi, Alemu Yami, and Negusse Dana. "Adopting poultry breeds in the highlands of Ethiopia." *EIAR* 26 (2006).
- Gueye, E. "Poverty alleviation, food security and the well-being of the human population through family poultry in low-income food-deficit countries." *Inst of Agricultural res (ISRA)* (2003).
- Milkias, Matawork. "Chicken meat production, consumption and constraints in Ethiopia." *J Food Qual* 54 (2016).
- CSA. Federal democratic republic of Ethiopia central statistical agency agricultural sample survey volume I report on livestock and livestock characteristics (Private peasant holdings) (2015).
- Tadelle, Danyel, C. Kijora, and K. J. Peters. "Indigenous chicken ecotypes in Ethiopia: growth and feed utilization potentials." *Int J Poult Sci* 2 (2003): 144-152.
- Bush, Jennifer. "The threat of avian flu predicted impacts on rural livelihoods in Southern Nation, Nationalities and Peoples Region (SNNPR), Ethiopia." *FEG* (2006).
- Getu, Addis, and Malede Birhan. "Chicken production systems, performance and associated constraints in North Gondar Zone, Ethiopia." *British j Poultry Sci* 3 (2014): 27-35.
- Dessie, Tadelle, Wondemeneh Esatu, L. Vander Waaij and Fisseha Zegeye et al. "Village chicken production in the central and western highlands of Ethiopia: Characteristics and strategies for improvement." *ILRI* (2013).
- Hailu, Mazengia. "Review on major viral diseases of chickens reported in Ethiopia." *J Infect Dis Immun* 4 (2012): 1-9.
- CSA. Agricultural sample survey 2010/11, Report on livestock and livestock characteristics (private peasant holdings). *Statistical Bull* 2 (2011): 1-21.
- Endale, L. "Food Security Contributions of Urban Agriculture: the case of some households in Akaki kaliti sub city, Addis Ababa." Addis Ababa University, Ethiopia (2011).
- Moreki, J. C. "Opportunities and challenges for the Botswana poultry industry in the 21st century: a review." *Livest Res Rural Dev* 22 (2010): 1-5.
- Asare-Boadu, K. "High Production Cost Killing Poultry Industry." *Modern Ghana* (2010).
- Ghasura, R. S., A. S. Sheikh, B. K. Aswar and R. M. Rajpura. "Constraints faced by poultry farm entrepreneurs in Banaskantha district, Gujarat." *Int J Rural Stud* 20 (2013): 1-5.
- Tadelle, D., D. Nigusie, Y. Alemu, and K. J. Peters. "The feed resource base and its potentials for increased poultry production in Ethiopia." *Worlds Poult Sci J* 58 (2002): 77-87.
- Demeke, Solomon. "Egg production performance of local and White Leghorn hens under intensive and rural household conditions in Ethiopia." *Livest Res Rural Dev* 16 (2004): 22-29.
- Achoja, F. O., A. U. Ofuoku, and R. N. Okoh. "Linkages between socio-economic variables and the efficient marketing of poultry feeds in Delta State, Nigeria: implication for extension services." *Worlds Poult Sci J* 62 (2006): 709-715.
- Singh. *Modern Livestock and Poultry Production*, United States of America. (2008)
- Dana, Negussie, and Brian Ogle. "On-farm evaluation of Rhode Island Red and local chickens under different management regimes in the Highlands of Ethiopia." *ESAP* (2000).
- Regassa C, Berhanu S, Fufa F and Hunduma D. "Sero-prevalence of Newcastle Disease in Backyard Chickens in mid Rift Valley of Oromia, Ethiopia. Proceedings of the 12th International conference of the Association of Institutions of Tropical Veterinary Medicine Montpellier, France." (2007).

**How to cite this article:** Regasa Gemechis, Tadesse Hagazi Fantay and Belay Getachew Derbew. "Assessment of Major Constraints of Small Scale Intensive Chicken Farms in and around Nekemte, Oromia, Ethiopia." *J Vet Sci Techno* 13 (2022): 141.