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Assessment of husbandry practice and egg production performance of indigenous chickens in urban and peri urban area of Guder town, Oromia Region, Ethiopia

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ABSTRACT

The study was undertaken during May up to July 2020 in Guder town of Oromia regional state, Ethiopia. The aim of the study was to explore husbandry practices and egg production performance of indigenous chicken in the study area. A cross-sectional systematic random survey of 40 households was undertaken by using semi-structured and pre tested questionnaire. Information on management practices, production systems, egg production performances and constraints of indigenous chicken kept in Guder town was generated by semi-structured questionnaire. The primary data collected from house hold survey was processed and analyzed by using statistical package for social science (SPSS) version 20.0 software. Descriptive statistics such as percentage, mean, ranking, standard deviation, and cross tabulation were used to analyze the data quantitatively. Data gathered through key informant interview, focus group discussion and personal observation were analyzed qualitatively to strengthen data obtained from household survey. Due to its small space and lower capital requirement sample household's ranked chicken as the first important animals kept in the study area. The main purposes of keeping indigenous chicken in the study area were for home consumption followed by generation of income. The most important feed resources of indigenous chicken kept in the study area were feed obtained from scavenging, house hold wastes, market left over, and industrial by products. Majority of the households accommodated their indigenous chicken in separate house constructed for confinement of the chicken. The higher mortality rate of indigenous chicken in the study area was caused by disease and predator. The most commonly happening and economically important disease in the study area was Newcastle. The commonly observed predators in the study area were cat and dog. Health and feed problems were the first and the second constraint of indigenous chicken production in the study area respectively. Therefore area based development involvement could help to increase productivity of indigenous chicken and thereby improve the income of small holders.

KEYWORDS: Guder town, indigenous chicken, management

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INTRODUCTION

Ethiopia is the first in Africa and tenth the world in livestock populations. Poultry species are originated from south East Asia and domesticated from red jungle fowl [1]. Poultry include all domestic birds such as chickens, turkeys, ducks, geese, ostriches, guinea fowls, and pigeons. However, in Ethiopia except chickens the others are found in their natural habitat whereas geese and turkeys are not common [2]. Poultry contribute important socio-economic roles for food securities, generating additional cash incomes and religious/cultural reasons [3]. In Ethiopia chicken populations are estimated to be about 56.53 million [4]. Indigenous chickens are largely dominated flock size and

have good potential to adapt different agro-ecologies through habitual management systems [2]. But, they are non-descriptive types and vary in body size, conformation, plumage color and other phenotypic characteristics [5].

Still these large population indigenous chickens are found in traditional production systems. However, they are well adapted to the tropics, resistant to poor management, feed shortages, tolerate to diseases and provide better test of meat and eggs than exotic chickens [6]. There is no well-developed breeding practice in chicken production in Ethiopia. However, farmers are in the view to increase meat and egg production by following their own breeding practice [7].

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The breeding practices of farmers were allowing cocks and hens to mate indiscriminately without systematic mating. The other practice was the use of improved exotic breeds crossing with local ecotypes. Nevertheless, their effects on upgrading of the village chicken performances have been minimal. This is because the programs were usually planned without participation of farmers, with no parallel improvement of feeding, housing and health care and typically lasts for short time [8]. There has been number of reports on the constraints which played significant role in loss of poultry population. Among these are disease and predation [5], market system [8], management and production system [9]. Some researchers have made researches on chicken production systems, origin and associated constraints in different parts of Ethiopia.

The poultry sector is characterized by its industrialization, faster growth in consumption and trade than any other major agricultural sectors in the world.

Worldwide, industrial systems now account for approximately two-thirds of egg and poultry meat production [10]. It has been reported by researchers that the main problem of indigenous chickens in the tropics is that they are poor producer of egg and meat [11] and [2]. But even if they show low productivity, they are well adapted to the tropics, resistant to poor management, feed shortages and tolerate some of the most common diseases and parasites. In Ethiopia, chicken production plays a great role as a prime supplier of eggs and meat in rural and urban area and as a source of income, especially to women. [12] Reported also that the role of poultry in Ethiopia has been becoming more important over time.

Therefore, the need of reviewing indigenous chicken production trend, potential and constraints is a prioritized issue in the country. Moreover, reviewing the successful experiences of chicken production and its socioeconomics and thereby delivering synthesized form of information for beneficiaries is also another landmark for improving the production of poultry in the country. In rural and urban area of our country where a numbers of chickens are kept, there is deficiency of information on the existing situation of their management system and egg production performance. Therefore, this research work was initiated to explore the existing situations of management practices and egg production performance of indigenous chicken in study area. The first consideration in planning and implementing any area specific poultry development intervention is to describe and understand the existing real constraints and performance levels of chicken under various husbandry practices and egg production performance in the area.

MATERIALS AND METHODS

Description of the Study Area

The study was conducted at Guder town. Guder is found in West Shewa Zone of oromia region, Ethiopia. located 12 km west of ambo town. It is located between geographical coordinates of 8^o58'N to 9^o 67'N latitude and 37^o 46'E to 38^o67'E

longitude with altitude average 2101 masl. The mean annual rainfall was 1068 mm and the mean minimum and maximum daily temperatures of the area were 14 and 28^oC, respectively.

Sampling Techniques and Procedure

The study was employed purposive sampling techniques. The sampling frame for household survey was people who live in the four (01, 02, 03, and 04) kebelles of Guder town and possess indigenous chicken breeds of different age and sex category. Total of 40 Households (10 from each kebeles) who possess indigenous chicken breeds of different age and sex category and who keep this chicken under different production system was purposively selected from each kebelles of the town and interviewed with semi- structure questions. To strengthen the data collected from house hold survey focus group discussions that contain a total of 8 attendants (2 individual in each kebele) was held. A total of 4 respondents who came from concerned governmental and nongovernmental organizations was attend on key informant interview. The total sample size for this study was 52.

Data Collection and Management

The data input for this study was obtained from both primary and secondary sources. The major sources of secondary data were from governmental and nongovernmental publications, annual and inventory reports, previous studies, internet sources and books. The primary data was collected from sample households, participants of Focus group Discussion and Key informant interviews which were made with urban Agricultural office experts, extension agents and farmers who owned and currently keep local chicken. In addition personal observation was used as another source of primary data. Pretested and semi structured questionnaires were used for generation of both qualitative and quantitative data.

Data on husbandry practice, egg production performance, and problems related to keeping indigenous chicken breeds in the study area were gathered through different data collection methods. Thus, Household Survey, Focus Group Discussion, Key Informant Interview and Personal Observation were employed to collect primary data. Questionnaires were prepared in English and translated into Afan Oromo to collect the data from the households. The HH survey was conducted by 5 recruited and trained enumerators, who were fluent in local Language (Afan Oromo). With regard to their educational status, the enumerators were Diploma holders from DA in animal science.

Data Processing and Analysis

The primary data collected from household survey through semi-structured questionnaires was processed (data was checked for accuracy, data entries will be coded, coded data was entered in to the computer and editing of the data were completed). Processed data was analyzed by using statistical package for social science version 20.0 software.

Descriptive statistics such as percentage, mean, ranking, standard deviation, and cross tabulation was used to analyze the data quantitatively. On the other hand, data gathered through key informant interview, focus group discussion and personal observation was organized according to themes and analyzed qualitatively to strengthen data obtained from household survey.

RESULT AND DISCUSSIONS

Demographic Characteristics

Majority of the respondents in the study area are women and this shows that more women are engaged in chicken rearing than men. This has an implication that more or equal emphasis has to be given to women in extension works of modern poultry keeping.

Majority of the respondents (85%) were married and the rest were single. This could indicate that poultry keeping in the study area is mainly for family consumption. Only few (5%) respondents were illiterate and majority of them had an education level of elementary and above. This shows that education might be an important factor to adopt indigenous chickens. The mean age of respondents in the study areas is 44.95 years. This shows that respondents engaged in rearing indigenous chicken are under active age and this could be an opportunity for further modernizing of the indigenous chicken production in the study area (Tables 1-6).

About (42.5%) of total respondent were Protestant Christian whereas remaining (30%, 20% and 7.5%) are Orthodox, Muslim and Wakefata in the study area respectively. There was variation respect to the proportion of respondent the following different religion in the study area. Average number of family size in the study area was (6.1) of which average number of males in the family was (3.7) and females in the family were (2.6).

Sources of Income for Households

The majority of the respondents (32.5%) livelihood was depended on the labor work this shows that majority of indigenous chickens in the study area were reared by labor workers and they have education level that could help them to manage indigenous chickens.

Rearing indigenous chickens needs some technical and practical knowledge to be more productive followed by animal production

Table 1: Age and family size of the sample respondents

Household history	N	Mean	Mini.	Max.	SD	CV
Age of HH (years)	40	44.95	30	60	7.23	16.1
Family size						
Male	40	3.7	1.0	8.0	2.27	61.3
Female	36	2.6	1.0	5.0	1.24	46.6
Total	40	6.1	1.0	15	3.87	63.5
Children						
Male	34	3.12	1.0	7.0	1.93	62.0
Female	29	2.89	1.0	6.0	1.63	56.4
Total	36	5.0	1.0	13.0	3.27	65.5

(27.5%). Of the total income generated from animal production, (32.5%) was contributed by indigenous chicken in the study area. This shows that indigenous chickens were reared not only for consumption but also for the purpose of income generation.

Livestock Holding

The average number of indigenous chicken reared in the study area was (11.98). However, there was high variability in chicken possession among the sample respondents which is revealed by higher standard deviation. The higher variability in

Table 2: Sex, marital status, education, ethnic group and religion of respondents in the study area

Parameters	N	%
Sex		
Male	12	30
Female	28	70
Marital status of HH		
Married	34	85
Single	6	15
Educational status		
Illiterate	2	5
Elementary	20	50
High school	7	17.5
Diploma	10	25
Degree	1	2.5
Ethnic group		
Oromo	31	77.5
Amhara	9	22.5
Tigre	---	---
Others	---	---
Religion of HH		
Protestant	17	42.5
Orthodox	12	30
Muslim	8	20
Wakefata	3	7.5

Table 3: The main income sources of the sample respondents

Income source of HH	N	%
Government work	2	5
Animal production	11	27.5
Plant cultivation	4	10
Labor work	13	32.5
Construction	2	5
Trade	8	20
No income	---	---

Table 4: Number of livestock possessed by the sample households in the study area

Households livestock number	N	Mean	Mini.	Maxi.	SD	CV
Indigenous chicken	40	11.9	1.0	35	8.4	70.4
Exotic chicken	40	7.2	1.0	21	5.0	69.8
Ox	40	1.45	0.0	4.0	1.2	86.8
Cow	40	0.83	0.0	3.0	0.8	102
Heifer	40	0.77	0.0	3.0	0.8	107
Bulls	40	0.27	0.0	1.0	0.4	164
Sheep	40	1.57	0.0	6.0	1.4	94.1
Goat	40	0.85	0.0	4.0	1.0	120
Donkey	40	0.37	0.0	2.0	0.5	144
Calves	40	0.87	0.0	3.0	0.8	100

Table 5: Livestock preference and purpose of keeping chickens

Livestock preference	N	%
Chicken	30	75
Cattle	10	25
Why do you keep chickens		
Income generation	13	32.5
Home consumption	22	55
For hatching	5	12.5

Table 6: Type of chicken house used by respondents in the study area

Poultry housing system	N	%
Type of house present		
Separate poultry house other than family house	19	47.5
Simple shade	13	32.5
Share with family house	8	20
Housing construction materials		
Bamboo	17	42.5
Wood	9	22.5
Mesh wire	8	20
Stone wall and grass roof	5	12.5
Corrugated iron sheet	1	2.5
Frequency of poultry house cleaning		
Not cleaning	---	---
Daily basis	28	70
weekly	12	30
monthly	---	---
Poultry house cleaned by		
Women	21	52.5
Men	10	25
Children	9	22.5
Not clean	---	---

number of chickens among the households could be associated with wealth and objectives of keeping chickens. That means wealthier family could possess more number of chickens than that of poor households. In the same manner, households keeping chicken for commercial purpose will possibly possess higher number of chickens than those keeping chickens for home consumption.

Small numbers of other livestock species were recorded in the study area. This result shows that as compared to other livestock species higher number of chicken were kept in the study area because they need easy management and lower space requirement. The lower number of other livestock species, especially cattle, could be associated with shortage feeds and management problems in the study area.

Livestock Preference and Purpose of Keeping Indigenous Chickens

About 75% of the sample respondents preferred keeping chicken to cattle and the rest (25%) preferred rearing cattle to chicken. The highest preference of chicken to cattle by the respondents indicates that chicken production is more suitable for urban and peri urban agriculture than cattle. This could be in connection with cost of production and land requirement. Rearing indigenous chickens is cheaper than cattle as it needs low initial capital, small land and easy for management. Majority of the sample respondents (55%) keep indigenous chickens primarily

for home consumption, (32.5%) as additional household income and (12.5%) of sample respondents for hatching.

Indigenous Chicken Production System

Source and breed of indigenous chicken

In the study area the respondents keep both indigenous and the exotic chicken breeds. (60%) of the respondents prefer to keep indigenous chicken due to their adaptation to the environment, resistant to disease, low feed utilize, nonselective to feeds, low management, keep under simple shade, more scavenging, local availability and low cost to purchase. (40%) of the respondents were interested to keep exotic breeds due to their high productivity.

According to [13] the egg production potential of local chicken is 30-60 eggs/year/hen with an average of 38 g egg weight under village management conditions, while exotic breeds produce around 250 eggs/year/hen with around 60 g egg weight in Ethiopia. All households have got indigenous chicken breeds by purchasing from market and private organizations. The selling price of indigenous chicken to producers was 150-250 ETB. Price difference was due to difference in the body size and age of the chicken. Only 8 respondents (20%) used his/her own hatchery as a chicken source.

Housing system

Majority of respondents (47.5%) used separate poultry house followed by simple shade house (32.5%), and the least percentage of sample respondents (20%), used their family house sharing with chicken. Though majority of the household used separate poultry house for indigenous chicken production, the houses were not constructed considering the space requirement per a chicken and not hygienic. Moreover it was observed that the houses lack some internal facilities like egg laying nests and feeders. This indicates that there is a huge knowledge gap among the producers about the modern chicken production and it needs a due attention by concerned bodies to create awareness.

The houses were built from locally available materials such as bamboo, wood, mesh wire, thatch grasses and corrugated iron sheets. The few respondents who are sharing their home with chicken indicated that the main reason for sharing is small number of chicken, lack of awareness, shortage of land and construction materials. This has an implication that it could harm human health and also leads reduction of production indigenous chickens. This result is in agreement with [10] who reported that majority of village chicken producers use separate shelter for chicken production in Benshangul-Gumuz and [6] who reported that about 51% of farmers kept their chickens in separate shelter in north western Ethiopia; but it is in contrary to findings of [11] who reported both in Ethiopia and Kenya, the majority of chickens are housed either with family or in kitchen.

All respondents "clean chickens" house, but cleaning interval and quality of cleaning differ from one respondent to another (personal observation). Majority of the respondents (70%)

used to clean chicken house on daily basis and some (30%) in weekly basis. Taking care of chicken in the study area was done by mainly women (52.5%) followed by men (25%) and children (22.5%).

Feeds and feeding system

The major feed sources of indigenous chickens in the study area were feeds and other non-feed substances obtained from scavenging (worms, insects, green leaves, crop seeds, and sand), homemade wastes, market left over, grain supplements, industrial by products (oil seed cake and wheat bran). Only 37.5% of the respondents supplement their indigenous chickens (Table 7). Cereals and household wastes are the main feed sources being supplemented by the sample respondents. Sorghum, maize, and wheat are common cereals used for supplementation. However, in some occasions few respondents did use formulated rations and wheat bran to supplement their indigenous chickens. Ration formulation from the available feed ingredients was unknown by majority of the respondents (85%) and only few (15%) used to formulate ration. This shows that feeding system of the area is traditional and should be improved through awareness creation. Regarding frequency of feeding of indigenous chickens, all (100%) respondents provide feed on daily basis/once per day.

Majority of the respondents (75%) provide feed for layers, whereas about 15% of the respondents provide for chicks and (10%) of respondents for growers. However, during farm visit it was noticed that some of the owners provided feed/grain for their chicken by spreading on the ground where as some others were observed while they provide feed for their chicken by using dirty feeders. So, it is critical to create Awareness among the producers about the importance of an appropriate Feederer and waterer in relation with chickens health. Majority of the sample respondents (65%) indicated that feed scarcity is not a major problem for indigenous chicken production in the study area, but about (35 %) of the respondents mentioned it as a serious problem. From the total respondents, about (22.5%) indicated that feed shortage occurs in wet season. Their further explanation indicated that during this time the grass grows and covers the ground.

Water and watering system

Water plays an important role for feed digestion and metabolic activity of chickens (Table 8). All of the respondents in the study area provide water for their chickens and majority of them use pipe water. As it was noticed during farm visit, almost all materials used by the sample respondents for providing water for chickens were not cleaned and dirty. This needs due attention since unhygienic conditions might lead to disease to chickens. Thus, concerned bodies should provide intensive trainings for producers on the concerns of chicken bio-security. Majority of respondents (70%), the distance between home of the house hold and source of water was less than one kilometer and (30%) of respondents distance of water source was 1-2 km. (45%) of all respondents provided water *ad libitum*, whereas (40%) provided three times per day and the remaining (15%)

Table 7: Type of feeds and feeding system of indigenous chickens in the study area

Feeding and feed resources	N	%
Source of feed		
Processed	16	40
Ingredient	24	60
Apply ration formulation		
Yes	6	15
No	34	85
Have you supplement feed		
Yes	15	37.5
No	25	62.5
Price of processed feed supplement		
Not used	25	62.5
Medium	5	12.5
High	10	25
Quality of processed feed supplement		
High	15	37.5
Medium	---	---
Not used	25	62.5
Feeding frequency		
Daily	40	100
Weekly	---	---
Three days interval	---	---
Category of feeding		
Chicks	6	15
Grower	4	10
Layers	30	75
Feed scarcity		
Yes	14	35
No	26	65
Season of feed scarcity		
Dry season	5	12.5
Wet season	9	22.5
No scarcity of feed	26	65

Table 8: Watering of indigenous chicken in the study area

Watering and water system	N	%
Do you provide water to your chicken		
Yes	40	100
No	---	---
Which season year provide water		
Bega	30	75
Bega & kiremit	10	25
How frequent you provide water		
Once	---	---
Twice	6	15
Thrice	16	40
Ad libitum(freely)	18	45
Water source		
River	---	---
Pipe	30	75
Tape water	10	25
Water supply container		
Plastic made	28	70
Wooden trough	10	25
Metal made	2	5
Distance of water from homestead		
<1km	28	70
1-2km	12	30
>2km	---	---

offered two times per day. according to all respondents majority of chicken management activities which include feeding, watering and cleaning of chicken house are done by women in the study area.

Indigenous chicken production systems

Majority of sample respondents (45%) use semi intensive production system of rearing indigenous chickens, thus in this system chickens are allowed to scavenge around their house and supplemented by cereal crops. About (35%) of respondents reported that they use extensive production system so that chickens are scavenged all necessary feeds and water. Some other respondents (20%) reported that they use intensive system to rear indigenous chickens (Table 9).

Production performance of Indigenous chicken

(93.4%) of the respondents were interested in rearing exotic chickens than rearing local chickens due to their higher egg production performance than local chickens (Table 10).

The respondents rated the performance of indigenous chickens as good (21%), not well (52.2%) and (26.8%) have no idea about the performance of the indigenous chickens because their chickens have not started production. About (84%) of respondents reported that egg size of indigenous chicken was smaller than the exotic breeds. All respondents (100%) reported that indigenous chicken's egg was sweetest and best in taste when used as consumption. Average Number of eggs laid was (76.3) per hen per year as estimated by respondents.

Utilization of eggs produced per households

The survey result indicated that sample respondents utilize egg produced primarily for home consumption (50%), for sale (30%) and some others (20%) for hatchery purpose (Table 11). This result is in agreement with [14] that in rural areas of Benishangul-Gumuz region smallholder farmers primarily produce chickens for home consumption. This study implies that commercial chicken production is not yet widely practiced in this study area as result the cost of egg and chicken was expensive in Guder town as compared to other areas of the country. Higher demand of chicken products in the town cannot be satisfied by low level of production and, thus commercial chicken production systems should be promoted. Increasing population size, active economic developments and, there is high need for chicken products in Guder town.

Occurrence of Disease, Predators and Parasite

Diseases of Indigenous chicken

According to the researches assumption, the economic losses due to diseases in smallholder poultry cannot be accurately calculated (Table 12). In the study area all respondents believed that all chicken diseases were considered as Newcastle disease (NCD). They further assumed that it was the most prevalent and economically important disease that destroys poultry population. [15] also reported that the major cause of death for all type of poultry is seasonal outbreak of Newcastle disease (NCD). Of all respondents (60%) reported occurrence of disease in their farm, whereas the rest (40%) of the respondents

Table 9: Production systems of Indigenous chickens in the study area

Production system	N	%
Intensive	8	20
Semi-intensive	18	45
Extensive	14	35

Table 10: Production performance of Indigenous chicken breeds in the study area

Production performance	Mean	Min.	Max	SD	CV
Average eggs/hen/clutch	15.9	12	19	2.25	14.1
No. of egg incubated/set	11.2	8	14	1.47	13.2
No. of egg hatched/set	9.45	7	12	1.43	15.2
No. of clutch/year	4.57	3	7	1.15	25.2
Total egg production/hen/year	76.3	65	84	5.52	7.24
Average age of cockerel at 1 st mating (weeks)	22.7	20	26	1.48	6.53
Average age of pullets at 1 st egg (weeks)	26.67	24	29	1.29	4.83

Table 11: Utilization of egg produced by indigenous chickens in the study area

Purpose of eggs	N	%
Consumption	20	50
Income	12	30
Hatchery	8	20

Table 12: season of disease occurred in the study area

Which season disease occur mostly	N	%
Dry season	14	35
Wet season	18	45
Not present	8	20

revealed that there is no occurrence of disease in their farm, they further explained that they do not observe disease in their farm because of that they keep their chicken under good management situations.

Majority of the respondents and veterinarians indicated that Newcastle (Fengel) Symptoms were (Head and wing dropping and sleeping and sometimes diarrhea, weakness, fluid in mouth and eye, reduce feeding and watering, don't move). This result indicated the disease might probably be Newcastle disease. During group discussion and key formant interview livestock production and health experts reported that occurrence of disease in the farm reduced number of chicken, their productivity and income of the respondents. Frequent occurrence of disease in the farm might be due to lack of attention, effect of poor extension and limitation of veterinary services. Thus, it needs deep discussion between agricultural experts and poultry keepers. As reported by [16] NCD is one of the major infectious diseases affecting productivity and survival of village chicken in the central highlands of Ethiopia.

As information obtained from health experts during focus group discussion indicted that the most commonly occurring chicken

diseases in the study area were Newcastle diseases, Gomboro disease, and other respiratory diseases.

Season of disease occurrence

Respondents indicated that the major causes of losses in the study area were disease. (45%) of the respondents indicated that the severity of the disease was higher during wet season. According to (35%) of the respondents chicken disease occurs in dry season. According to respondents, the common signs of disease frequently occurred in both seasons were watery and yellowish diarrhea, closing of eyes, sleeping and droppings of wings, nasal discharge, twisting of head, and loss of appetite. During wet season the rain starts to fall and the environment becomes very wet. Wet season was also characterized by feed shortage in the study area.

The wet environmental conditions together with feed shortage that occur during wet season affect resistance of chicken to disease at wet season as compared to dry season. According to remaining (20%) of respondents there were no diseases that occur in area. During focus group discussion and key informant interviews veterinarians and animal production experts reported that awaking of poultry keepers, identifying Season of disease severity, Provisions of medicine for sick birds, and improving of all management systems were corrective actions to be taken to protect disease in the study area.

Treatment and controlling methods of disease

Some of the respondents told that contamination was the main sources of chicken disease. The respondents couldn't identify sick animals from health once. (76.3%) of the respondents treated only when chicken get sick and (23.7%) of respondents didn't face and treat disease. (75%) of the respondent's treatment of the chicken was done by animal health expert, (18.7%) of the respondents treat their chicken by themselves, and (6.3%) no disease. According to the information obtained from the respondents both scientific and traditional methods were used to control the disease of indigenous chicken in the study area. (37%) of the respondents implemented scientific disease controlling techniques. they reported that they take their chicken to the nearby veterinary clinic as soon as they observe disease symptoms.

(9.6%) of the respondent used traditional methods for controlling disease they explained that they treat sick birds by administration of lemon, alcoholic drinks "areke" by adding with feed and water. They further revealed that utilization of traditional methods provided good result for controlling disease in the area. (6%) of the respondent use both the traditional and scientific methods. The rest (47.4%) of the respondents not face and control disease in study area.

Predators of Indigenous chicken

According to the respondents major predators in the study area were cat (70%) and followed by dog (22.5%). Only (7.5%) of the respondents did not observe predator problems in the area.

Respondents explained that they practiced different means of controlling of predators that attack different age classes of chicken. To protect their chicken from predator (45%) of the respondents kept the chicken in the house, (35%) of the respondents use mesh wire, whereas (12.5%) of respondents tie their chicken and control their movement (Table 13).

External parasite of Indigenous chicken

External parasites are one that affects indigenous chicken that occurs when the house of poultry was not clean. (72.5%) of the respondents reported that external parasites were occurred in their farm. As mentioned by the respondents the types of external parasites were "kinkin", "kimach". The only controlling method that they perform was cleaning the house. (27.5%) of the respondents revealed that there was no parasite occurred in their farm.

Provision of Extension services

There was low extension support from responsible bodies, lack of appropriate chicken and egg marketing information to producer farmer and lack of enough space for chicken marketing in urban markets in the study area. According to the survey results (50%) the respondents were accessible to extension service. Around (50%) the respondent didn't get any service in the study area. So, due to lack of extension service the production performance of indigenous chicken was low and it became difficult to improve the performance of the chicken in the study area (Table 14).

During group discussion and key informant interview attendants explained that there was no extension services provided to indigenous keepers in the study area. They further clarified that there was poor access to vaccines, veterinary services and other poultry production technologies that contribute for development of poultry farming in the study area, According to our observation the relationship/linkage between chicken keepers and the extension service providers was very weak in the study area. There was high (1-5km) distance between extension service provision center and chicken keeper's house.

Constraints of indigenous chicken production

According to respondents, the most constraints of indigenous chicken production in the study area were disease (0.28) (1st rank), feed (0.19) (2nd rank), predators (0.144) (3rd rank) and the lowest percentage constraint was water (0.02). Regarding the constraint ranked above in the study area the main problems raised by respondents were disease and feed (Table 15).

Under farmers management condition poultry production, prevailing disease, predators, market problem, lack of water, lack of proper health care, poor feeding and extension together with veterinary services were reported as the major constraint by [17] and [18]. The same as the study conducted in Fogera woreda [5] reported that the two major constraints of poultry production were disease and shortage of feeds which were comparable with the current results.

Table 13: Predators and controlling methods of indigenous chickens in the study area

Predators	N	%
Cat	28	70
Dog	9	22.5
Not observe	3	7.5
Controlling methods of chicken		
Kept in house	18	45
Use mesh wire	14	35
Tie the chickens	5	12.5
Not present	3	7.5

Table 14: Distance of extension service and respondent house

Distance of extension service and respondent house	N	%
1-2 km	9	22.5
2-3 km	4	10
3-4 km	5	12.5
4-5km	1	2.5
>5 km	1	2.5

Table 15: index value of constraints ranked by respondents in the study area

Constraints	Rank 1	Rank 2	Rank 3	Rank 4	Result of index value
Disease	11	12	9	10	0.28
Predators	6	4	7	4	0.1436
Lack of regular medication	9	6	5	8	0.1355
Feeds	4	8	9	7	0.1916
House	5	9	2	6	0.1427
Lack of market chain	4	1	0	1	0.0378
Land	0	0	0	0	0
Water	1	0	0	2	0.0196
Total	40	40	32	38	0.9508

CONCLUSION

The study was undertaken during May up to July 2020 in Guder town of Oromia regional state, Ethiopia. The aim of the study was to explore husbandry practices and egg production performance of indigenous chicken in the study area. Most indigenous chicken rearing in the study area were carried out by women. The main purposes of keeping indigenous chicken in the study area were for consumption and followed by income. The most important feed resources of indigenous chicken kept in the study area were feed obtained from scavenging, house hold wastes, market left over, and industrial by products. Majority of the households accommodated their indigenous chicken in separate house constructed for confinement of the chicken. The higher mortality rate of indigenous chicken in the study area was caused by disease and predator. The most commonly happening and economically important disease in the study area was Newcastle. The commonly observed predators in the study area were cat and dog. Health and feed problems respectively, were the first and the second constraint of indigenous chicken production in the study area.

The attention given to indigenous chicken, particularly in breeding management, supplementary feeding, health care and housing practices was very low in the study area. Hence

better breeding management, improving the health of poultry, practicing Supplementary feeding could increase the productivity of birds. Poultry keepers in the study area have low knowledge on improved and effective indigenous chicken production practices; hence continuous training and awareness creation should be done on feeding, housing, and health management of poultry so as to enhance the productivity.

Generally large scale commercial indigenous chicken production has not developed in the study area. In the short term is an opportunity for small holders to apply poultry without large competition. In the long term small holders might increase productivity by slowly intensifying their production systems. The finding of the study indicates options for increasing and intensification of indigenous chicken production in the study area. For higher returns there should be more use of inputs (Feeding, housing and disease controlling practices).

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